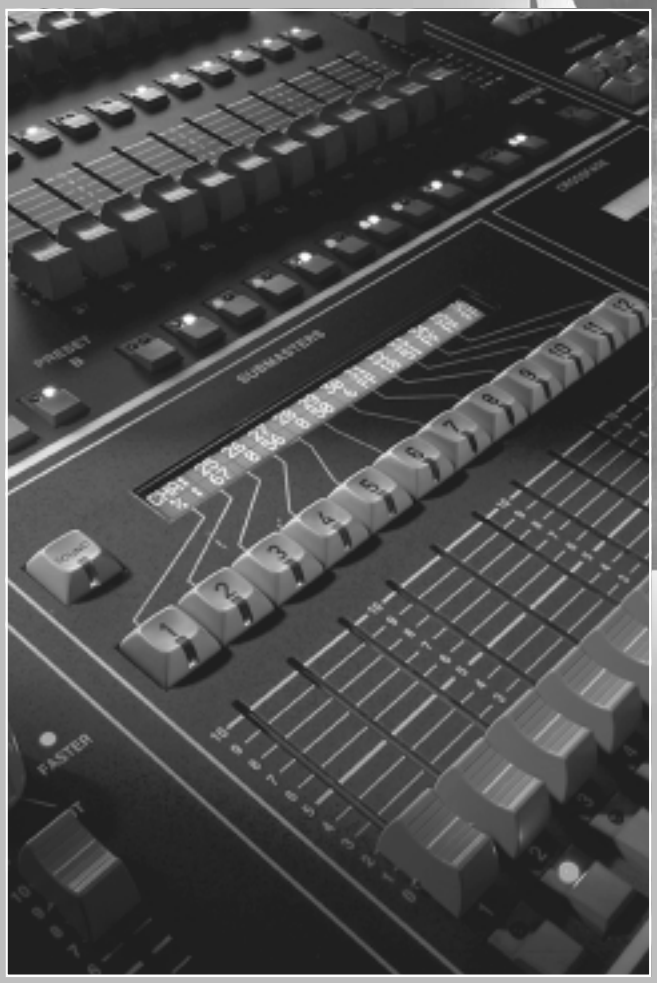
CANTOR 48 / 96

Instruction
Manual



ADB
Lighting Technologies

ME 1073

1106.01.073

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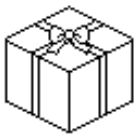


TAKING DELIVERY AND UNPACKING

As soon as you receive your equipment, open the boxes and inspect the delivered goods.

If you observe any damage, immediately contact the carrier and ensure that your complaint is recorded as regards the defects noticed. You can be confident that when this equipment left our factory it was in perfect condition.

Check that the goods you have received conform to the dispatch note and that the dispatch note conforms to your order. You will find the particulars of your desk on an identification label affixed to the rear face. If this is not the case, contact your supplier immediately, and he will clarify the situation in order that you may be completely satisfied.

These are the permissible storage conditions:

Temperature	: -10 to +50°C
	: rate of change -20°C per hour
Relative humidity	: 20 to 90% condensation free

Description of the console

MANUAL MODE

Inverter in MANUAL position - 24, 48 or 96 channels - 512 dimmers

2 Presets (A and B),
1 Fader page
- with 24 channels
- with 2 Preset Masters (A+B)

or **1 Preset**
1 Fader page
- with 48 channels
- with 1 Preset Master (B)

or **1 Preset**
2 Fader pages
- with 96 channels
- with 1 Preset Master (B)

Submasters
- 12 Submasters
- copy of the output in one operation (<SUM>)

Visualisation
- 48 red LEDs for effective output for the dimmers
- 48 green LEDs for blind operations
- 2 illuminated LC displays (2 lines of 40 characters / 2 lines of 16 characters)
- optional monochrome monitor (RS232)
- optional colour monitoring via PC-Link

Flash
- 1 selection key for normal or solo mode (with information LED)
- 48 individual Flash keys (1 per channel)
- 2 Flash Preset Master keys (A + B)
- 12 individual Submaster Flash keys (1 per Submaster)
- 1 general Flash fader permitting regulation of the intensities of all Flashes

Patch
- 512 possible dimmers
- unlimited number of dimmers per channel

Limits
- every desk channel can be limited

MEMORY MODE

Inverter in MEMORY position - 24 , 48 or 96 channels - 512 dimmers

Decimal keyboard
- For selecting and calling up memories, chasers, effects and evaluation times for the playback

Submasters
- 12 Submasters
- copy of the output in one operation (<SUM>)
- a set of submasters can be stored in up to 20 banks

Playback
- 2 Playback Submasters (stage and preset), either manual, automatic with start button or auto sequential; speed correction potentiometer for direct speed control at any time
- 2 manual mode linear transfer levers; access to the two Submasters (individually) for modifications of the intensities

Flash
- 1 button for selecting normal or solo mode with LED indication
- 48 individual channel flash buttons
- 2 preset master flash buttons A & B
- 12 individual submaster flash buttons
- 1 Grand Master flash fader enabling adjustment of the flash intensities

Chasers
- 9 different chasers can be run simultaneously
- 120 individual steps per chaser
- 3 different chaser curves: abrupt, stepless, sawtooth
- 3 step motion modes: forward, backward, pendulum
- 2 different chaser channel modes: normal-positive, inverse-negative
- audio trigger control mode
- 1 fader for real time speed modification

Special Effects
- 9 different pre-programmed types of special effects
- maximum 96 steps per effect
- 3 different effect curves: abrupt, stepless, sawtooth
- 3 step motion modes: forward, backward, pendulum
- 2 different effect channel modes: normal-positive, inverse-negative
- audio trigger control mode
- 1 fader for real time speed modification

Memorisation
- 20 banks of submasters
- 200 memories
- wait, up and down time between 0 and 998 seconds
- sequencing (memory, chaser, special effect)
- direct blind access for modification for intensities and times
- stored memories can instantaneously called up in a submaster or in the playback section

Patch
- 512 possible dimmers
- unlimited number of dimmers per channel

Limits
- every desk channel can be limited^

Visualisation
- 48 red LEDs for effective output for the dimmers
- 48 green LEDs for blind operations
- 2 illuminated CL displays (2 lines of 40 characters / 2 lines of 16 characters)
- optional monochrome monitor (RS232)
- optional colour monitoring via PC-Link

Storage on Memory card
- all important desk data can instantaneously stored to and read from a standard memory card
- optional data storage via PC-Link on standard floppy drive

Softkeys
- keys A-F for macro sequences of up to 18 commands

External Lines
- 8 fully programmable External Lines

MIDI
- programmable MIDI IN and OUT functions. MIDI THRU connector enables MIDI THRU loops

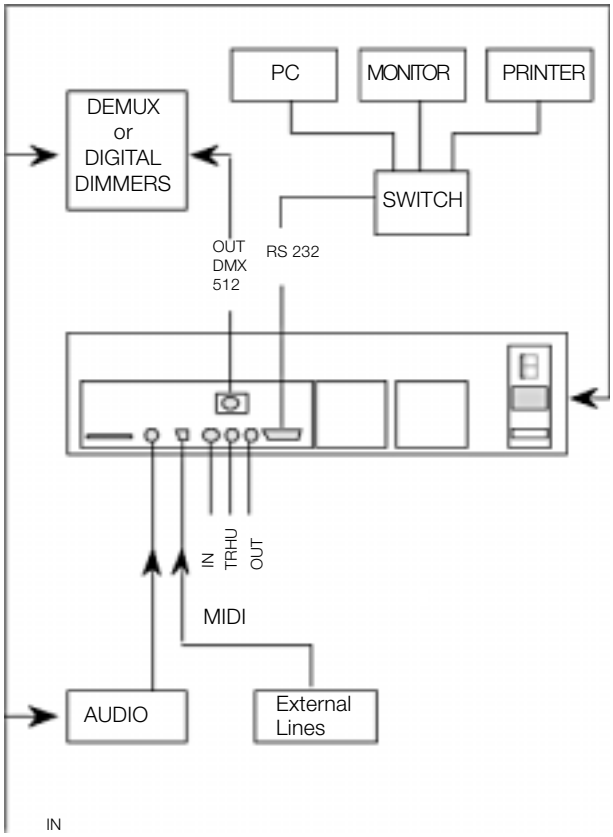
Colour Changer
- up to 30 channels can operate as Colour Changer channels

Menu
- choice of channel set-up mode:
  mode 1: 24 channels - 2 presets - 1 fader page
  mode 2: 48 channels - 1 preset - 1 fader page
  mode 3: 96 channels - 1 presets - 2 fader pages
- Memory Previewing of Memory in preset Submaster via green LEDs (channel set-up mode 1 + 2)
- beep on / off
- selective data storage
- programming Softkeys
- programming External Lines
- programming MIDI IN / OUT
- RS232 peripherals: monitor, printer data select
- colour changer: channel list, mode ‘free’ / ‘frame’ (up to 50 colours)

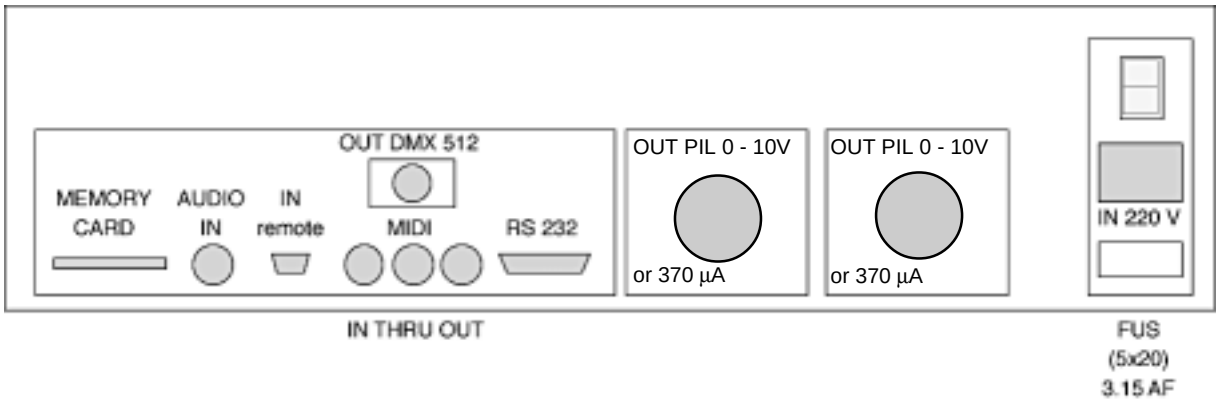
Options / Peripherals RS232
- monitor
- PC-Link for data storage on a standard PC
- RS232 data switch

Two Cantors
- 2 desks can be linked via the MIDI ports in order to achieve 96 faders for 96 desk channels (channel set-up mode 3 only)

CONFIGURATION



CONNECTORS



AUDIO IN : type 5P DIN

IN REMOTE : type DE09-S

OUT DMX 512 : type XLR5-FX

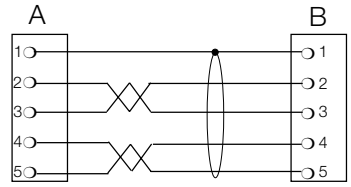
MIDI (IN, THRU, OUT) : type 5P DIN

RS 232 : type DB25-S

IN 220 V : type IEC 320-C14

OUT PIL 0 -10 V or 370 µA (option) : type SOCAPEX 337

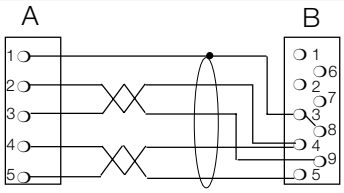
Interconnection cable to peripheral equipment



Cable
Max. Length: 250 m
section 2 x 2 x 0.34 mm²
+ shielded

CANTOR / ADB portable dimmers

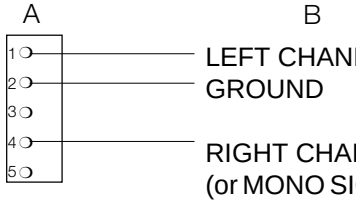
connector A : CANNON / XLR5-MX
connector B : CANNON / XLR5-FX



Cable
Max. Length.: 250 m
section 2 x 2 x 0.34 mm²
+ shielded

CANTOR / EURODIM

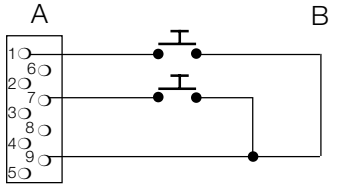
connector A : CANNON / XLR5-MX
connector B : DEO9 - P



Cable
Max. Length.: 30 m
section 3 x 0.14 mm²
shielded

CANTOR / AUDIO

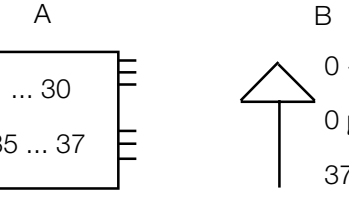
connector A : DIN 5 P
connector B : audio equipment



Cable
Max. Length.: 250 m
section ... x 0.34 mm²
+ shielded

CANTOR / REMOTE CONTROL EXTERNAL LINES

connector A : DEO9 - P
connector B : Following equipment



Cable
Max. Length.: 250 m
section ... x 0.34 mm²
+ shielded

CANTOR / 0-10 V or 370 µA

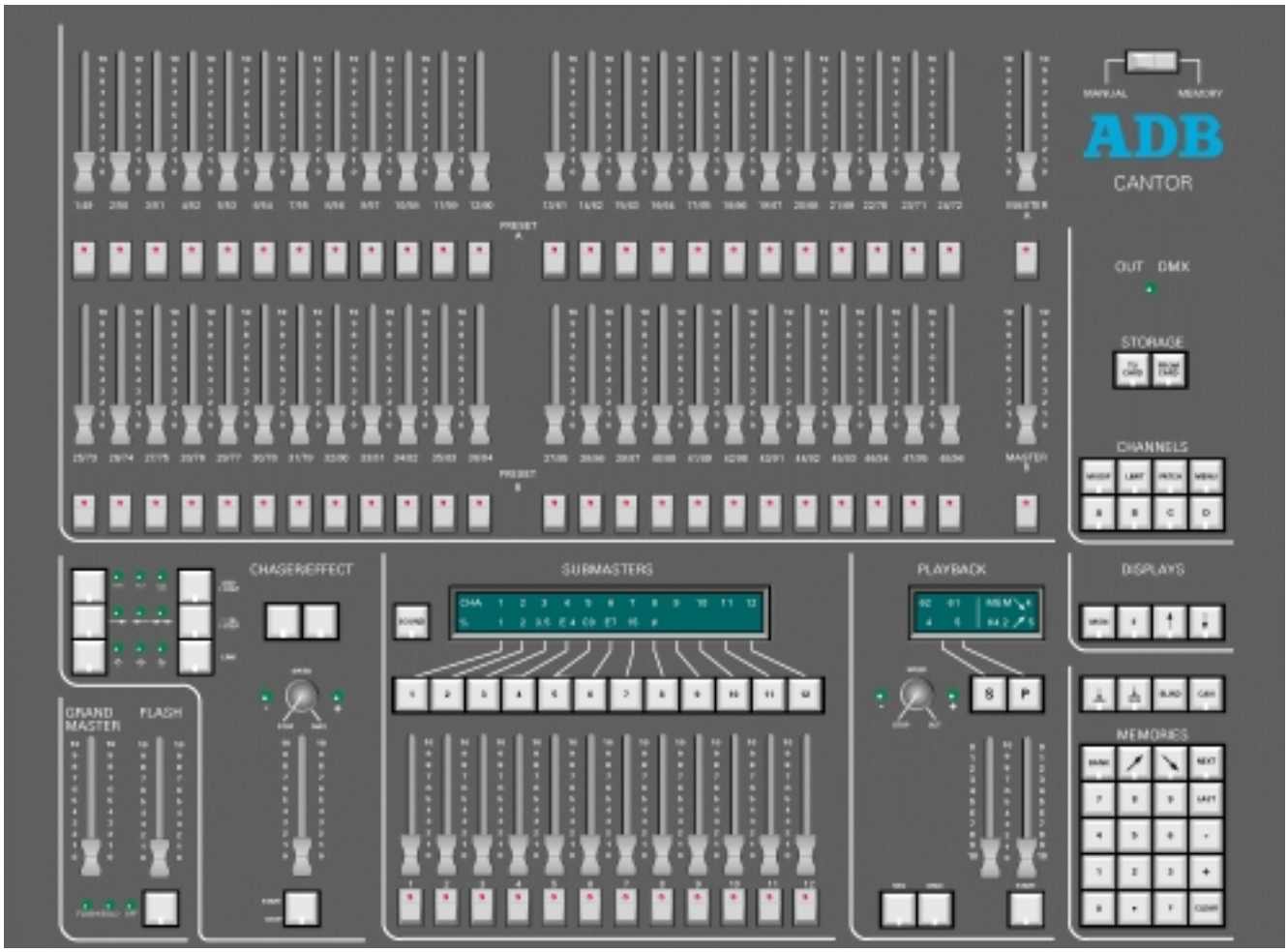
connector A : SOCAPEX 337 male
connector B : Following equipment
-

Cable
Max. Length : 15 m
section: 5 x 0.34 mm²

CANTOR / MIDI IN / OUT / THRU

connector A : DIN 5 P
connector B : DIN 5 P

Front



Initialization of the system

Light the console by means of the switch located on the rear of the device. Push the CAN key and the IN key simultaneously, keep them pushed in, turn the console off, then back on again, and finally, release the two keys.

Your console now has:

- empty memories
- empty banks
- empty submasters
- empty transfer registers
- all links cancelled
- the programming of the soft keys (macro) and external lines is cancelled
- the storage configuration is cancelled
- the configuration has been reinitialized either in - manual mode: 2 preset/24 channels or
  - memory mode: 1 preset/48 channels
- the MIDI configuration has been reinitialized
- the programming of MIDI events is cancelled
- empty colour changer list

Manual Mode

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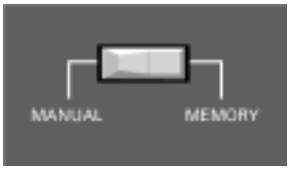
Introduction

The MANUAL mode is a simplified mode of machine functioning permitting an operator who has little familiarity with the Memory consoles to work with entire safety.

That is why only the following functions are active:

- 1 or 2 Presets with:
  - 48 channel flash keys
  - 2 Preset «MASTER» faders
  - 2 Preset flash keys
- general flash faders and flash selection key
- 12 Submasters with:
  - 12 keys for loading the Submasters
  - 12 attenuation faders
  - 12 flash keys
- general function keys
  - PATCH
  - limiting the channel output value



Switching on

After starting the console by means of the switch located on the back of the device, position the inverter in «MANUAL» position.

Selecting the number of Presets:

When your console leaves the factory, it is configured, for channel set-up mode 2 : 1 Preset and 48 channels

You may, however, also configure it in 2 Presets of 24 channels or in 1 Preset of 96 channels (2 fader pages).

Select the «MENU» mode and push ↑ or ↓

To exit, push the key «CL» twice.

Creation of a luminous state in Preset A (channel set-up mode 1 selected)

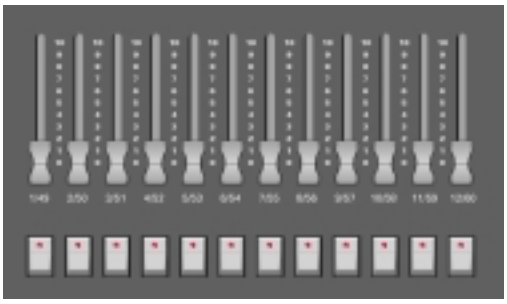
GRAND MASTER at 100%

Master A at 100%, Master B at 0%.

Regulate the channels with their individual faders. The red LEDs light up, and are graduated depending on the intensity of the corresponding channel.

For Preset B, proceed in the same manner with the MASTER A fader at 0% and MASTER B at 100%.

GENERAL MASTER | PRESET MASTER A | PRESET MASTER B



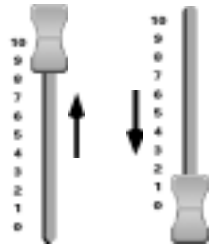
Notes :

- In the 24 channels / 2 Presets mode, the red LEDs on the two rows and the two flash keys are parallel to each other (for example: key 1 and 25).
- In the 48 channels / 1 Preset mode, only the Preset MASTER B is active.
- In the 96 channels (1 Preset) / 2 fader pages mode, the channels 49-96 can be selected by pushing the page toggle button E.

Transfer from Preset A to Preset B (24 channels and 2 Presets; channel set-up mode 1)

There are two different manual transfert modes :

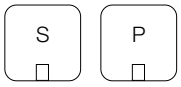
Standard Crossfading with preset master fader A and B
By manipulating the 2 Preset MASTER faders A and B, the corresponding row of channel is driven out.
The individual channels'red flash button LEDs follow.
The transfer philisophy is HTP (Highest Takes Precedence).



PRESET MASTER A | PRESET MASTER B

Dipless Crossfading with the Playback Submaster faders "Stage" and "Preset"
In order to perform dipless crossfades, push on the buttons "S" and "P" simultanéously.

To deselect the dipless crossfade mode, push the again on buttons "S" and "P" simultaneously. The corresponding button LEDs extenguish.



ADB Lighting Technologies

Working with 96 desk channels (channel set-up mode 3)

CANTOR can drive 96 desk channels. The corresponding channel set-up mode 3 can be selected via the MENU. In this mode, 2 fader pages of 48 faders each are active.

To toggle between the two fader pages use the fader page toggle key E.

The left built-in display indicates the active fader page via the symbols
P1 = fader page 1
P2 = fader page 2
in the right upper display corner

example:

1	2	3	4	5	6	7	8	9	10	11	12	P1
BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK19

or

1	2	3	4	5	6	7	8	9	10	11	12	P2
BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK	BK19

When moving a fader, the red channel LEDs indicate the outgoing DMX values (0-100%) of the channels of the active fader page.
If a channel fader is not synchronised with the corresponding channel's outgoing DMX value, the green channel LED lights up. In this case, before driving a channel out, it first has to be synchronised by moving it up or down. An arrow in the built-in left display indicates the direction of the fader movement

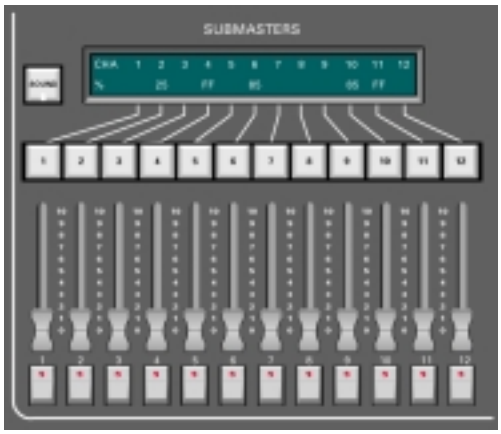
1	2	3	4	5	6	7	8	9	10	11	12	⇑	P2
BK	BK	BK	BK	BK	BK	#	BK	BK	BK	BK	BK		BK19

or

1	2	3	4	5	6	7	8	9	10	11	12	⇓	P2
BK	BK	BK	BK	BK	BK	#	BK	BK	BK	BK	BK		BK19

When the fader is finally synchronised, the arrow disappears and the green channel LED turns off.

Copying the outputs in a Submaster



By simply pushing on the upper key of a Submaster, you copy the CANTOR outputs in this Submaster.
By using the corresponding Submaster fader, you can then graduate the state thus constituted.

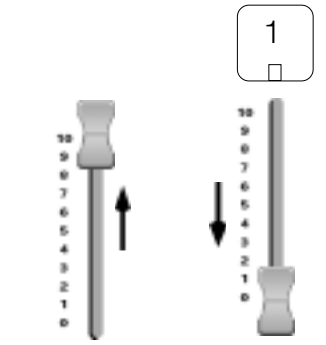
If the Submaster already contains a lighting state, you have to push the Submaster's upper key twice within 3 seconds. Il you do not want to overwrite the existing contents press CLEAR CLEAR.

This manipulation permits easy realization of two functions:

- the «HOLD» function, which permits you to keep the present state of the console under the control of a fader.
- transfer between successive states (in channel set-up mode 2 and 3).

Example:

- If MASTER B is at 100% and certain channel faders are moved up, the light appears on stage.
- Place the fader of Submaster 1 at 100% and copy the state on the scene by pushing the key of this Submaster. Then move the MASTER B fader down to 0%. The light remains unchanged.
- Construct your new state blindly with the help of the channel faders.
- To transfer, move the MASTER B upwards towards the top, and the fader of Submaster 1 downwards towards the bottom
- Take the same operations for the following transfers.



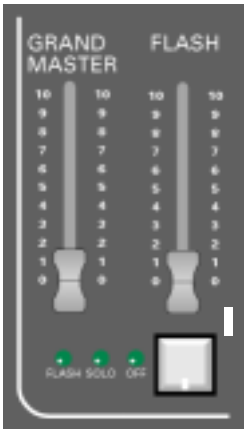
PRESET SUB 1

MASTER B

Cancelling a Submaster

To cancel a Submaster, just be sure that all the channels are at 0 (Preset master faders A and B at 0 and all the Submaster faders at 0), and then push on the upper key of the corresponding Submaster.

Selecting the flash mode



Press the flash key successively:

OFF : flash mode switched off, no flashing possible
FLASH : flash mode selected
SOLO : SOLO mode : only the selected channels are brought to the desk's output. All other channels are switched off.

In each case, the corresponding red LED lights up.

Flashing channels

Select the FLASH mode, then press the Flash key of the corresponding channel.
The channel lights up while you are pressing, to the value of the MASTER FLASH, without taking into account the Preset MASTERS A + B and of the individual channel faders.

Note :
In 24 channel 2 Presets mode, the flash keys of the two rows are parallel (for example, pushing the flash 1 or flash 25 has the same result).

Solo flash of a channel

Select SOLO mode, then press the flash key of the corresponding channel.

The channel lights up while you are pressing, to the value of the MASTER FLASH, without taking into account the Preset MASTERS A + B and the individual channel faders.
All the other channels are extinguished.

Flashing a Preset

Select the FLASH mode, then press the Preset MASTER A or B Flash key.

All the channels of the state light up while you are pressing, to the value of the MASTER FLASH, taking into account the individual channel faders but not the values of the MASTER faders.

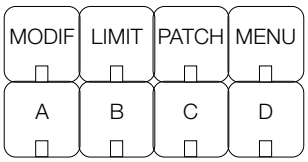
Note :
In channel set-up mode 2 and 3 , the MASTER A flash key is inactive.

Flashing a Submaster

Select the FLASH mode, then press the Submaster Flash key.

All the keys of the state light up while you are pressing, to the value of the MASTER FLASH, taking into account their values in the Submaster.

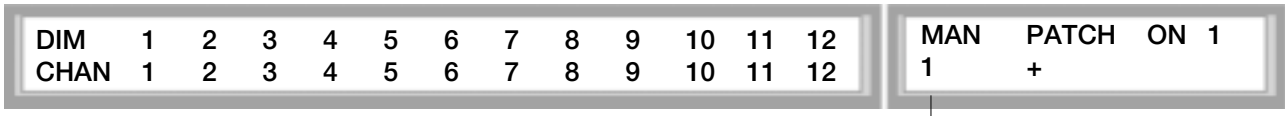
PATCH



Possible on 512 dimmers maximum, with an unlimited number of dimmers per channel.

Entering PATCH mode

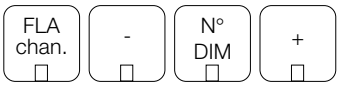
Push the PATCH key. Its LED blinks and the following displays appear :



The list of dimmers is always complete from 1 to 512, and may be paginated by manipulating the up and down keys of the DISPLAY mode.

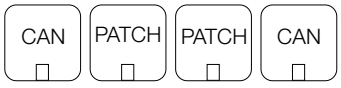
Creation of the PATCH

Select the channel by pushing on its Flash key.
Push this key a second time if you want to deselect this channel.
By default, the PATCH is 1/1.



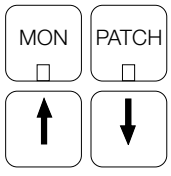
To add a dimmer to a channel, enter the dimmer number followed by the key «+».
To remove a dimmer attributed to a channel, push on key «-» and the dimmer number followed by the key «+».
One and the same dimmer cannot be attributed to different channels.
Attribute the number(s) of dimmer(s) by means of the numerical keyboard.

Return to PATCH 1/1
Push the following keys in order:



Disconnect all dimmers
Push the following keys in order :

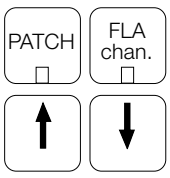
Visualisation of the PATCH dimmer by dimmer



Push the following keys in order:

To scroll page:

Visualisation of the patched dimmers on a channel



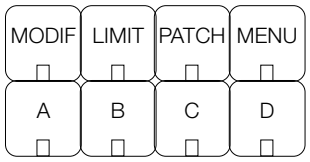
Push the keys in order:

To scroll page:

LIMIT

The LIMIT function permits:

- multiplying the output value of the channels by a factor < 1, which is equivalent to a PROPORTIONAL PATCH.
- limiting the output value of the channels in order to be able to keep individual faders at %.
- directly diminishing the value of a channel without worrying about what Submaster it comes from.



Entering LIMIT mode

Push the LIMIT key, its LED blinks and the displays show :

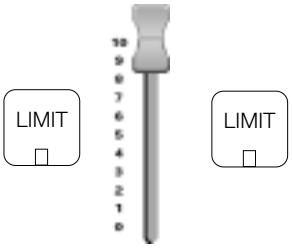
CHA	1	2	3	4	5	6	7	8	9	10	11	12
%			48					52				

MANUAL
LIMIT CHANNELS

The list of the channels is displayed in series of 12. This list may be paginated by manipulating the up and down keys of the DISPLAY mode. As soon as you touch the fader of a channel, the series containing this channel lights up.

Attributing a maximum limit

Push the LIMIT key (the LED blinks), move the fader of the channel up to 100% in order to collect the current channel value, then move back down to the limit value (this value appears in digits below the channel number on the display).
Limit other channels, if applicable, and confirm the operation by pushing the LIMIT key.
Act in the same way to modify a preceding re-input value.

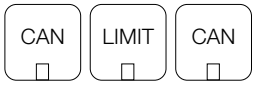


Cancelling the limit of several channels

Proceed as above, but do not lower the fader when it is at 100%.

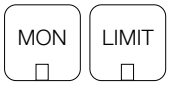
Cancelling all limits

Push the following keys in order:

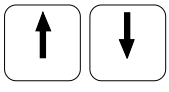


Visualisation of the limits:

Push the following keys in order:



To scroll page:



Note :
To work BLIND, position the master fader(s) at 0%.

Memory Mode

Contents

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Memorization	29
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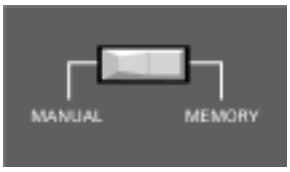
Selecting the number of Presets

When your console leaves the factory, or after complete re-initializing, it is configured, in MEMORY mode, channel set-up mode 2 / 48 channels / 1 Preset / 1 fader page.
We will see later that you can also configure it in channel set-up mode 1 or 3 (see «MENU» chapter).
Nevertheless, we will consider for the moment that we are in the basic configuration.

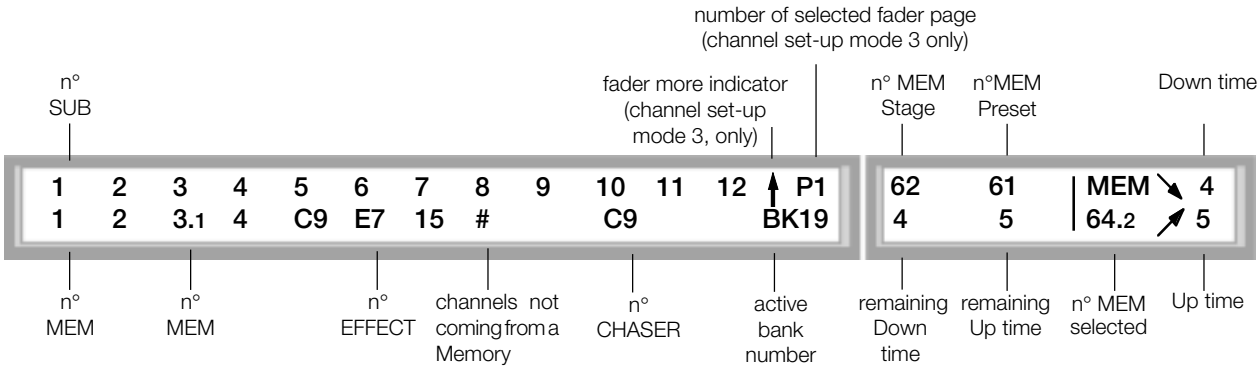


Setting the MEMORY mode

After switching on the console with the switch located on the back of the device, place the inverter in MEMORY position.

Now the displays show the contents of the different Submasters.

Example :


number of selected fader page
(channel set-up mode 3 only)
n° SUB
fader more indicator (channel set-up mode 3, only)
n° MEM Stage
n°MEM Preset
Down time
1 2 3 4 5 6 7 8 9 10 11 12 P1
1 2 3.1 4 C9 E7 15 # C9 BK19
62 61 MEM 4
4 5 64.2 5
n° MEM
n° MEM
n° EFFECT
channels coming from a Memory not
n° CHASER
active bank number
remaining Down time
remaining Up time
n° MEM selected
Up time

Creation of a luminous state

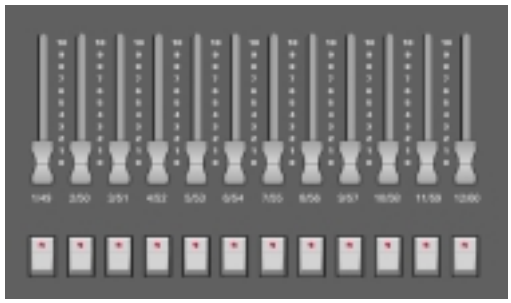
Move up the GENERAL MASTER

Move up the Preset MASTER fader B to 100%. Preset MASTER fader A is inactive.

You have 48 channels which you may regulate individually.

Preset MASTER B

Regulate the channels with their individual faders. The red LEDs light up and are graduated depending on the intensity of the corresponding channel.



Working with 96 desk channels

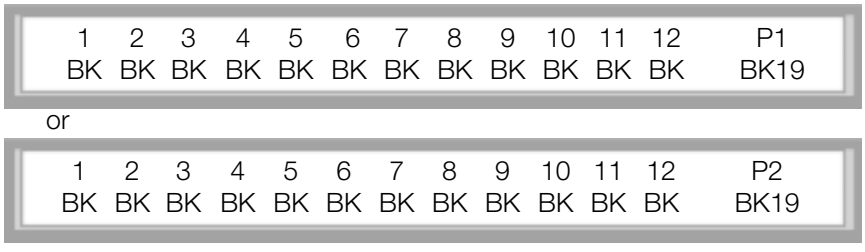
(channel set-up mode 3)

CANTOR can drive 96 desk channels. The corresponding channel set-up mode 3 can be selected via the MENU. In this mode, 2 fader pages of 48 faders each are active.

To toggle between the two fader pages use the fader page toggle key E.

The left built-in display indicates the active fader page via the symbols
P1 = fader page 1
P2 = fader page 2
in the right upper display corner

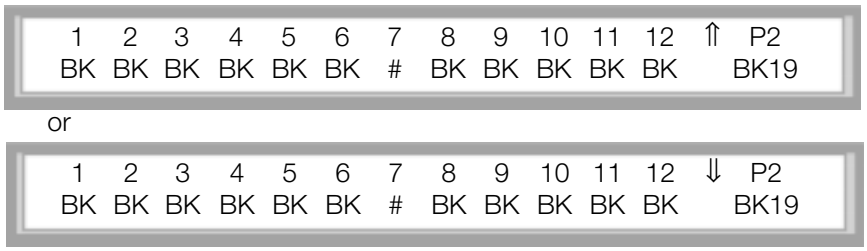
example:



ADB
Lighting Technologies

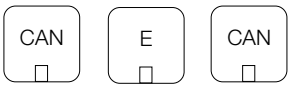
When moving a fader, the red channel LEDs indicate its outgoing DMX values (0-100%) of the channels of the active fader page.
If the fader is not synchronised with the corresponding channel's outgoing DMX value, the green channel LED lights up. In this case, before driving a channel out is first has to be synchronised by moving it up or down. An arrow in the built-in left display indicates the direction of the movement.

example :



When the fader is finally synchronised, the arrow disappears and the green channel LED switches off.

If the individual channel faders are all at zero, there is a way to bring the value of the second(non-active) fader page (1 or 2) also down to zero without toggling to the other page and collecting all values.



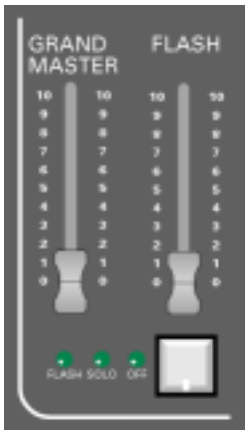
The key sequence is : CAN, E, CAN

Notes :

- If the key sequence CAN, E, CAN shall be executed automatically via a softkey, external line or MIDI in event command, the event has to be programmed in channel set-up mode 1 or 2.
  Afterwards it can be used / executed in channel set-up mode 3.

- In channel set-up mode 3 the Memory Previewing option is not operational! (see Menu section).

Flash



Selecting the flash mode

Press the flash key successively:

OFF : flash mode switched off; no flashing possible
FLASH : flash mode selected
SOLO : solo mode : only the selected channels are brought to the desk's output. All others channels are switched off.

In each case, the corresponding red LED lights up.

Flashing channels

Select the FLASH mode, then press the FLASH key of the corresponding channel.
The channel lights up while you are pressing, to the value of the MASTER FLASH, without taking into account the values of the Preset MASTER B or the individual channel faders.

Solo flash of a channel

Select SOLO mode, then press the Flash key of the corresponding channel.
The channel lights up while you are pressing, to the value of the MASTER B, without taking into account the values of the Preset MASTER B or the individual fader.
All the other channels are extinguished.

Remark :
In 24 channels / 2 Presets mode, the flash keys of the two rows are parallel (for example, pushing on flash 1 or flash 25 has the same result).

Flashing a state

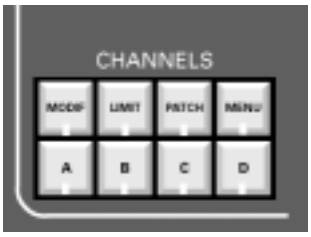
Select the FLASH mode, then press the Flash key of the MASTER B.
All the channels of the state light up while you are pressing the key, to the value of the MASTER FLASH, taking into account the values of the individual faders.

Remark:
In SOLO mode, the transfer channels are not affected and are not extinguished.

Flashing a Submaster

Select the FLASH mode, then press the Flash key of the Submaster.
All the channels of the state light up while you are pressing, to the value of the MASTERS FLASH, taking into account their value in the Submaster.

PATCH



Possible on 512 dimmers maximum, with an unlimited number of dimmers per channel.

Entering PATCH mode

Push the PATCH key. Its LED blinks and the displays show:

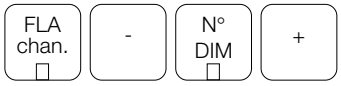
DIM	1	2	3	4	5	6	7	8	9	10	11	12
CHAN	1	2	3	4	5	6	7	8	9	10	11	12

PATCH	ON	CHA	20
20	+		

Selected channel

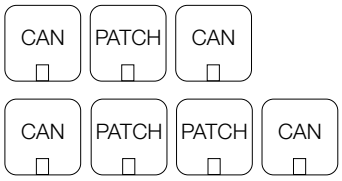
The list of dimmers is always complete from 1 to 512, and may be paginated by manipulating the up and down keys of the DISPLAY mode.

Creation of the PATCH



Select the channel by pushing on its Flash key.
Push this key a second time if you want to deselect this channel.
By default, the PATCH is 1/1.
To add a dimmer to a channel, enter the number of the dimmer followed by the sign «+».
To remove a dimmer attributed to a channel, enter the sign «-» and the number of the dimmer followed by the sign «+».
One and the same dimmer cannot be attributed to different channels.
Attribute the number(s) of the dimmer(s) by means of the numerical keyboard.

Return to PATCH 1/1

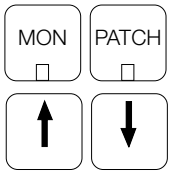


Push the following keys in order:

Disconnect all dimmers

Push the following keys in order :

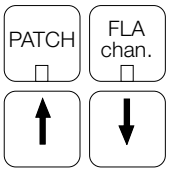
Visualisation of the PATCH dimmer by dimmer



Push the following keys in order:

To scroll page:

Visu-alisation of the patched dimmers on a channel

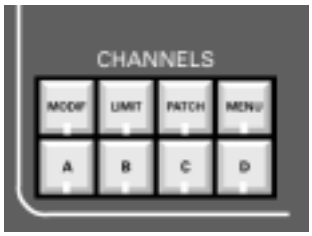


Push the following keys in order:

To scroll page:

LIMIT

The LIMIT function permits:
- multiplying the output value of the channels by a factor < 1, which is equivalent to a PROPORTIONAL PATCH.
- limiting the output value of the channels so that you can always «push» the individual faders to 100%.
- diminishing the value of a channel directly without worrying about what Submaster it comes from.



Entering LIMIT mode

Push the LIMIT key. Its LED blinks and the displays show :

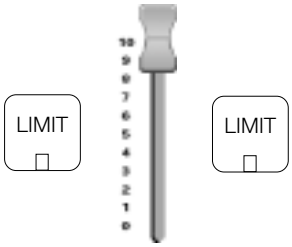
CHA	1	2	3	4	5	6	7	8	9	10	11	12
%			48					52				

LIMIT CHANNELS

The list of channels is displayed in series of 12. This list may be paginated by manipulating the up and down keys of the DISPLAY mode.
As soon as you touch the fader of a channel, the series containing this channel lights up.

Attributing a maximum limit

Push the LIMIT key (the LED blinks). Move up the fader of the channel to 100%, then move down to the limit value (this value is shown in digits below the channel number on the display).
Limit other channels, if applicable, and confirm the operation by pushing the LIMIT key again.
Act in the same way to modify a preceding re-input value.

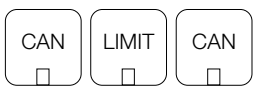


Cancelling the limit of one or more channels

Proceed as above, but do not move the fader back down when it is at 100%.

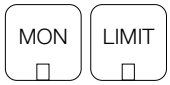
Cancelling all the limits

Push the following keys in order:

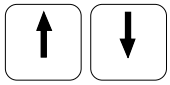


Visualisation of the limits

Push the following keys in order:



To scroll page:



Note:
To work BLIND, position the MASTER(s) at 0%.

ADB
Lighting Technologies

Memorisation

(with the aid of the Memory numbers)

The LED of the BLIND key will be light up for blind memorisation (after a general reinitializing, this LED is extinguished)

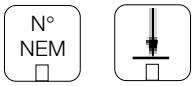
99 Memory positions numbered from 1 to 99 are available. You can memorise all the channels there.

In addition, you can use 300 intermediary positions numbered:

0.1 - 0.2 - 0.3
1.1 - 1.2 - 1.3
2.1 - 2.2 - 2.3
and so on up to
99.1 - 99.2 - 99.3

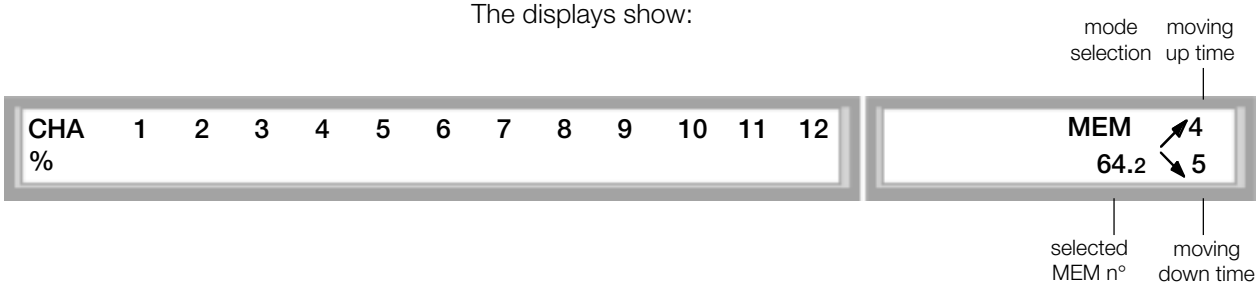
You can create up to 200 memories.

Memorisation of the state of the individual faders

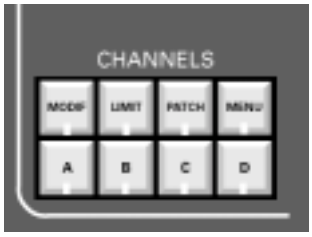


(By default, the decimal keyboard is in Memory mode)
To memorise the state of the individual faders, enter the Memory number; the LED of the «IN» key blinks if this Memory has not been created; push this key to memorise the cue.
If this Memory number already exists, the LED is extinguished.
Pushing twice on the «IN» key overwrites the content of the Memory, and replaces it by the state of the faders (an audible beep can be heard the first time the key is pushed).

The displays show:

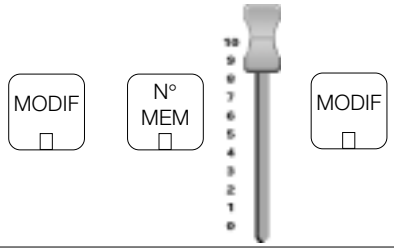


Eventually, when you arrive at the last Memory, the message «MEMORY FULL» appears.



Modifying the intensities in an existing Memory

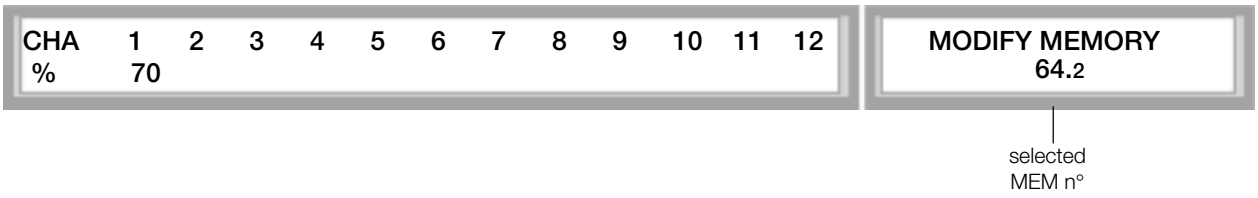
For this operation, select the MODIF mode. The LED blinks.



Enter the number of the Memory to be modified, and move the lever of the individual fader of the channel to be modified, until it arrives at its present intensity value (the display shows a «MOVE UP» or «MOVE DOWN» message depending on the manipulation to be performed). Then adjust the desired intensity for this channel.

As soon as you move the fader, the corresponding page appears on the display and the intensity appears in digits under the number of the channel.

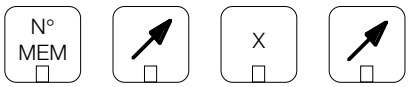
Confirm the operation by pushing the «MODIF» key again.



Introducing crossfade times into an existing Memory

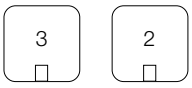
A 5 sec. time per default is recorded.

To introduce another up time, enter the Memory no., push the ↗ key, enter the time in seconds, or minutes and seconds, and confirm the operation by pushing the ↗ key again.

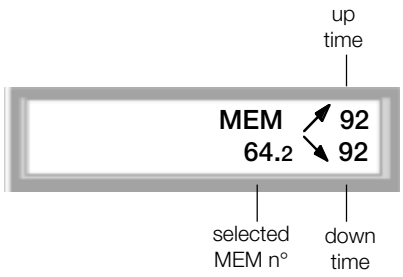


time in minutes (ex.: 1 min.)

time in seconds (ex.: 32 seconds)

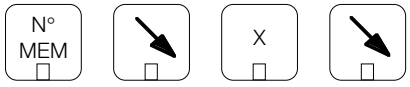


Note that the display shows the time in seconds

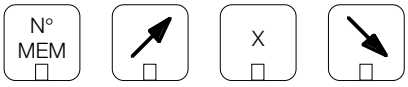


Note:
The maximum time is 16 min. 38 sec., or 998 sec.

To introduce another down time, enter the Memory no. , push the ↘ key, enter the time in minutes and seconds, and confirm the operation by pushing the ↘ key again.

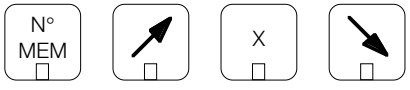


To introduce equal up and down times:



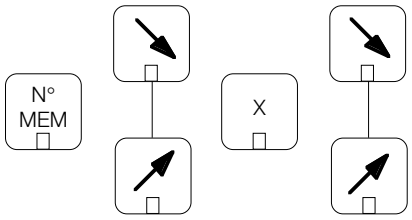
Introducing up and down times and memorisation in only one operation

To introduce up and down times in an unexisting Memory, press in order :



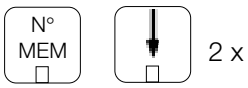
TIME

Wait times for Auto Sequence Playbacks



Wait times determine how long a lighting state remains on the Stage until the fade down time begins to be valid. Like Up and Down times, Wait times are assigned to the Memory in the Preset Submaster.
To assign a Wait time to a Memory, press in order.
Wait times are only valid in Auto Sequence mode.

To empty a Memory of its content



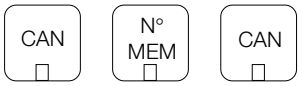
The MASTER B fader must be at 0%, and the LED of the «BLIND» key must be extinguished.

Select the Memory number, and push the key twice.

In this case, the moving up and down times are reinitialized at 5 sec.

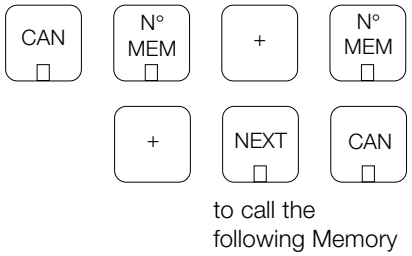
Note that the Memory, although empty, still exists.

To cancel a Memory



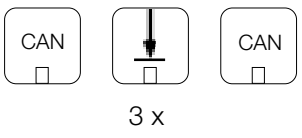
Push the following keys in order:
This time, the Memory has disappeared from the sequence.

To cancel several memories:



For example, enter the numbers of memories following a sequence such as the one opposite:

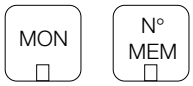
To cancel all memories:



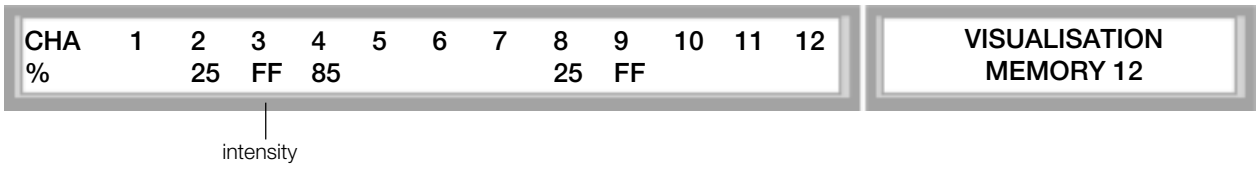
Push the following keys in order:

To visualise the content of a Memory:

Push the following keys in order:



The displays show:

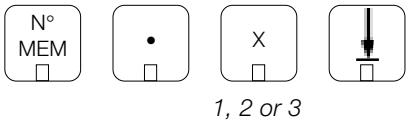


To paginate the visualisation of the channels

Use the keys NEXT and LAST to visualise other memories

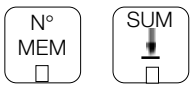
To insert a Memory with a decimal number

Enter the following keys in order:
- the whole number
- the point
- the decimal (1, 2 or 3)
- and push the «IN» key
  - once if the Memory is empty
  - twice if the Memory already exists



To memorise the sum of all the outputs

Enter the following keys in order:
- the Memory number
- and push the «SUM IN» key
  - once if the Memory is empty
  - twice if the Memory already exists

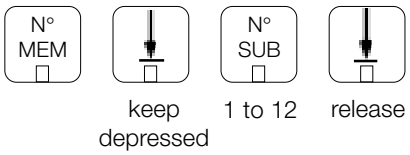


To memorise the state of one or more SUBMASTERS

Note:
if you push several «No. SUB»s, the different contents are added.

Enter the following keys in order:
- the number of the Memory
- push the «IN» key
- keep it pushed
- push the key(s) of the Submaster which you wish to memorise
- and finally, release the «IN» key.

If the Memory already exists (the LED of the IN key blinks) push the «IN» key and «SUB No.» a second time.



Note :
You can not memorise a Submaster containing a Chaser or a Special Effect.

Remarks:

- if the BLIND function is off, you memorise taking account of attenuations from the Submasters
- if the BLIND function is ON, you memorise without taking account of attenuations from the Submasters
- if you memorise the content of the several Submasters, the highest value of the common channels is dominant.

BLIND

To select the following Memory:

NEXT

Push the «NEXT» key

Note:
if no Memory has already been selected, before the first free number is displayed / selected.

To select the preceding Memory:

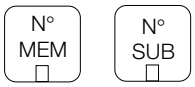
LAST

Push on the «LAST» key

Restitution

Restitution of a Memory in a Submaster

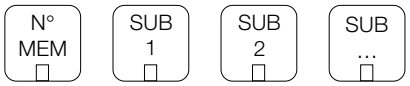
Enter the number of the Memory number and push the key of the Submaster.



Restitution of a series of Memories in several Submasters in sequence

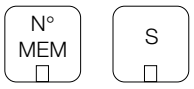
Enter the first Memory number and push the keys of the successive Submasters in the order of restitution.

Upon each restitution of Memory, the next Memory in the sequence is selected automatically.



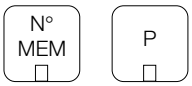
Restitution of a Memory in the Stage Submaster

Enter the number of the Memory and push the S key



Restitution of a Memory in the Preset Submaster

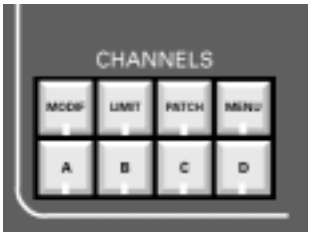
Enter the number of the Memory and push the P key

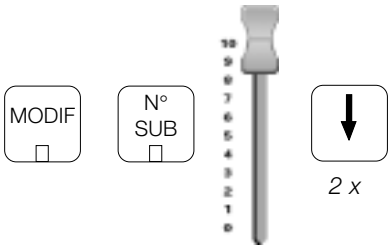


Modification of a lighting state in a Submaster

Select the MODIF mode. The LED blinks.

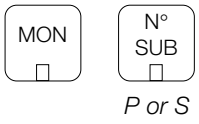
Push the key of the Submaster to be modified and move the lever of the individual fader of the channel to be modified until it displays its present intensity value (the display shows a «MOVE UP» or «MOVE DOWN» message, depending on the manipulation to be performed). Then adjust the desired intensity for this channel.





As soon as you move the fader, the corresponding page appears on the left built-in display and the intensity in digits appears under the number of the channel. Confirm the operation by pushing the «MODIF» key again. In this case, any Memory which may exist in the Submaster is not modified, and the number of the Memory blinks below the number of the Submaster on the display (that is, the content of the Submaster is different from the content of the Memory).

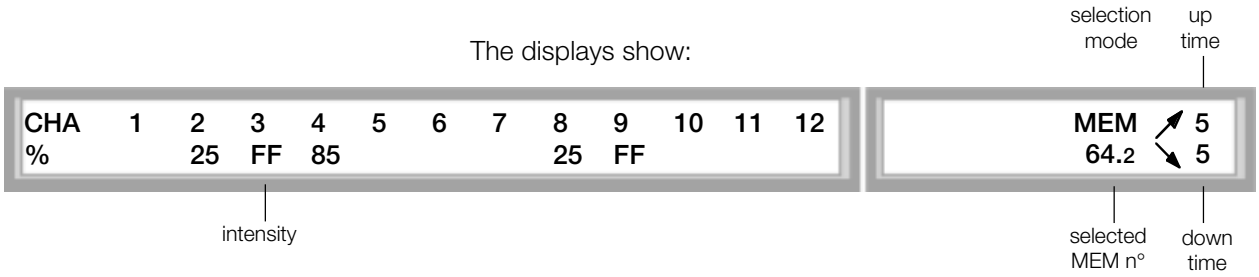
To modify the Memory as well, proceed as above, but instead of confirming the modification by pushing the «MODIF» key, push the «IN» key twice to memorise.

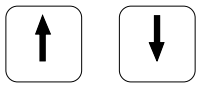


To visualise the content of a Submaster

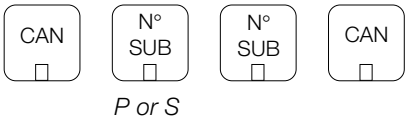
Push the following keys in order:

The displays show:





To scroll page:



To cancel the content of one or more Submasters

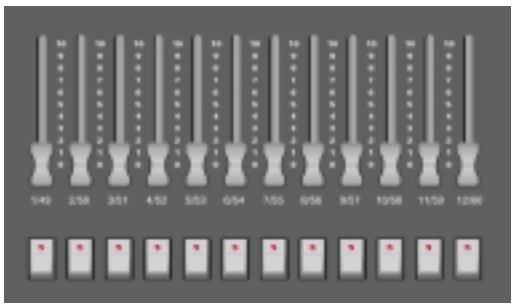
Push the following keys in order: P or S

Memorisation with the aid of Banks

One can also memorise lighting states without using memories

Copying the outputs («sum») in a Submaster

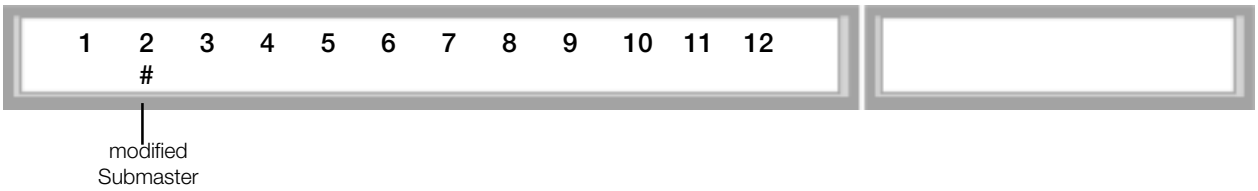
Build your lighting state with the aid of the individual channel faders (MASTER B is supposed to be at 100% as well as the Grand Master).



Copy the result obtained in a Submaster.

In the left built-in display, you will see the sign «#» below the Submaster number, which confirms that the Submaster has really been modified.

N° SUB □ 2 x
if the Submaster already contains channels



To memorise different lighting states, repeat these operations with other Submasters.

Remarks :

- in reality, you copy the output from the desk, that is, for each channel, the maximum level leaving the Preset(s) of the 12 restitution Submasters, the transfer Submaster, the Chasers, and the Special Effects.
- the «BLIND» key is without effect.
- this function is equivalent to a «HOLD» function, permitting to keep the present state of the desk under the control of a fader.

Note :
The «BLIND» key has no effect: it takes no account of the general fader or the fader of the Submaster.

Memorisation of a Bank

CANTOR contains 20 Banks of 12 Submasters which represents 240 additional storage means.

To record a Bank, push:

BANK □ N° BANK □ □ 2 x if the Bank already exists

- When a Submaster contains channels (whether or not they come from a Memory), the intensities of these channels are stored in the Bank.
  If these channels come from a Memory, the number of this Memory is also recorded for information purposes.
- When a Submaster contains a Special Effect or a Chaser, the number of the effect (and not the content) is recorded in the Bank.
- The Bank also tells the difference between an empty or occupied Submaster.

Restitution of a Bank

To load a Bank in the 12 Submasters, push:

BANK □ N° BANK □ BANK □ OR BANK □ NEXT □ OR BANK □ LAST □

The left built-in display shows (Example):

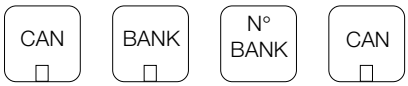
1	2	3	4	5	6	7	8	9	10	11	12	BANK
	BK	BK			BK							N°

Note:
The"BANK" function can be used with the functions of memorisation, restitution or Memory modification.

- Only the Submasters whose faders are at zero are actually charged. If the Submaster should contain a Memory when the Bank is recorded, the number of this Memory is displayed. If not, the Submaster receives the indication «BK».
- The other Submasters retain their old content and the inscription blinks below the number of the Submaster.
  They are only loaded with the content of the Bank when their fader goes back to 0 (they then receive the indication BK, or a Memory or effect number).
- Submasters which were empty upon recording are never modified. This permits you, for example, to retain the same content in the last 3 Submasters throughout the entire show.

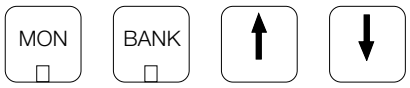
Cancelling a Bank

To cancel a Bank, it is necessary to empty the 12 Submasters, then record or, alternatively, to type in the key sequence

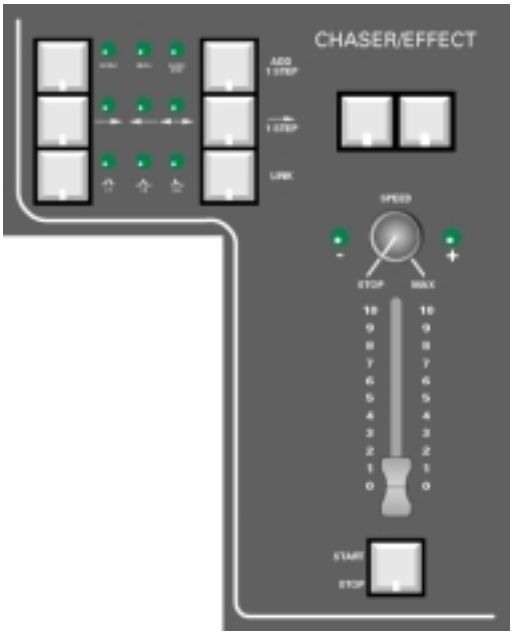


Visualisation of the banks

To display the banks which are not empty, push:



To scroll



Modification of the sequential order of the memories and visualisation

The order of a sequence is that of the Memory numbers.
The new sequence will cause Memory Y to follow after Memory X, selected at this moment.

Upon restitution, the CANTOR will pass directly from Memory X to Memory Y, skipping intermediate memories.

Insertion of a LINK in the Memory sequence.

- call the Memory (X) after which you wish to insert the Memory to be linked, and push the «LINK» key.

MEM X □ LINK □ MEM Y □ LINK □

- call the Memory (Y) and push the «LINK» key again.
  Repeat this operation if you wish to link another Memory to this one.

Cancelling a LINK

N° MEM □ LINK □ LINK □

- push the number of the Memory after which you wish to remove the LINK, and then the «LINK» key twice.

Note:
You can record a maximum of 20 «LINKs».

Visualisation of the memory list

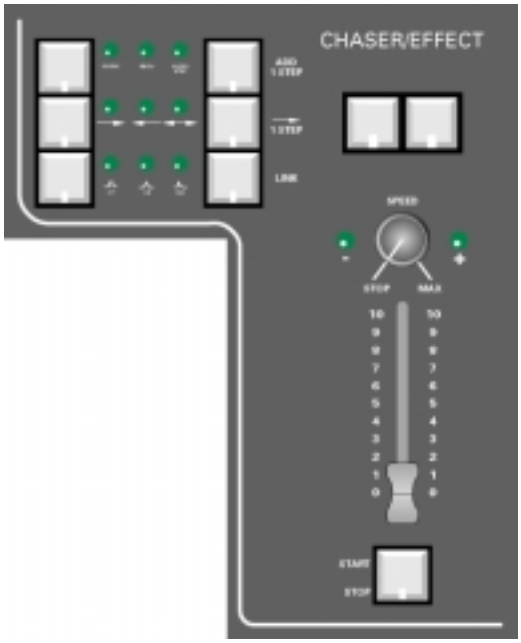
N° MEM □ LINK □

- push the number of the Memory beginning where you wish to visualise.
- then push the «LINK» key.

CL □ CL □

- exit this mode pushing the «CL» key twice.

Chasers



The Chaser mode offers 9 Chaser possibilities which may run simultaneously.
Each Chaser may consist of 99 steps maximum. Each step may contain all channels.

There is nevertheless a limit of 256 steps maximum for the whole set of Chasers (an audible beep sounds when this maximum number of steps has been reached).

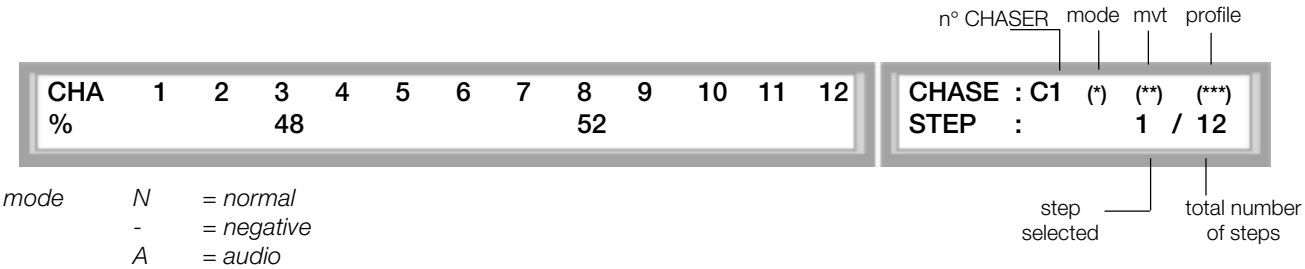
You can choose simultaneously

- The lighting mode of the Chaser, to be selected from among:
  1 - normal: in the step concerned, the channels are lit up, while those of the other steps are extinguished
  2 - negative: in the step concerned, the channels are extinguished, while of the other steps are lit up
  3 - audio: the Chaser proceeds on the basis of an audio signal.

- The type of Chaser movement, to be selected from among:
  1.- → forwards: the effect evolves regularly from the first step towards the last, and begins again at the first.
  2.- ← backwards: the effect evolves regularly from the last step towards the first, and begins again at the last.
  3.- ↔ back and forth: the effect evolves regularly from the first step towards the last, returns to the first, and keeps on pendulum.

- The step profiles from one Chaser step to another may be selected from among:
  1 - ⎍ abrupt: instant passage
  2 - ∧ stepless: progressively moving up and down
  3 - ◺ sawtooth: instantaneous movement up and progressive movement down

After selecting the Chaser mode, the displays show



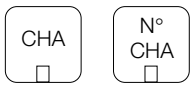
(*) mode *N* = *normal*
- = *negative*
A = *audio*

(**) mvt = *forwards*
= *backward*
= *back and forth/pendulum*

(***) profile *CT* = *abrupt*
CR = *stepless*
SW = *sawtooth*

The list of channels is by series of 12. This list may be paginated by manipulating the Up and Down keys from the DISPLAY mode.
As soon as you touch the fader of a channel, the series containing this channel is displayed.

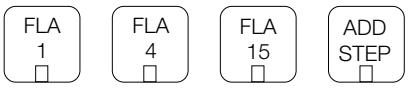
Building a Chaser



Select the Chaser mode and enter its number.
Note that to construct a blind Chaser, the fader of this mode must be at 0%.

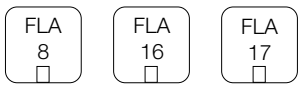
Examples :

A - Chaser with all channels at 100%



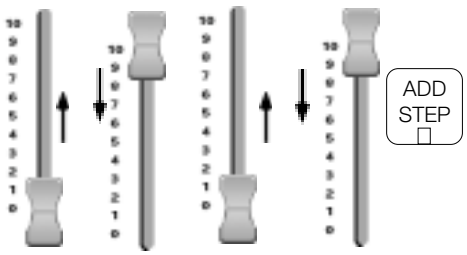
- push the flash keys of the channels participating in the first step. Each time the key is pushed, the green LED of the channel selected lights up.
- push the «ADD STEP» key to terminate the first step and open the second one.

Proceed in the same way to create the following steps and to create the last step.



- push the flash keys of the channels participating in the step.

B - Chaser with channels at different levels.



- regulate the intensity of the channels participating in the first step with the aid of their individual faders.
- push the «ADD STEP» key to terminate the first step and open the second.

Proceed in the same way to create the following steps and to create the last step.

- regulate the intensity of the channels participating in this last step with the aid of their individual faders.

Visualisation of a Chaser step by step

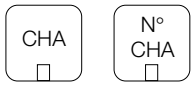
- Use the —> key. The green key LEDs light up for the step called

Blind simulation of a Chaser

- place the MASTER fader at 0%
- select the Chaser and push the «START» key. The LED simulates the Chaser.
- pressing the «START» key again stops the Chaser on the current step
- pressing «START» again starts the Chaser again

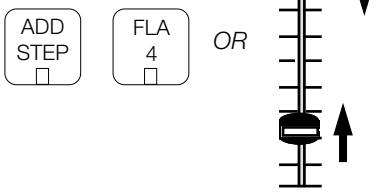
Adding a step in the Chaser

- select the Chaser mode and enter the Chaser number



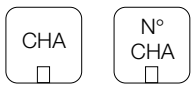
- push the «—> STEP» key to the step which preceeds the step to be added.

- push the «ADD STEP» key to open the step.
- push the flash keys or manipulate the individual faders of the channels participating in this step



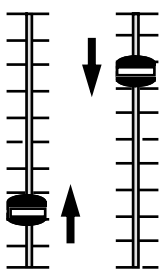
Modifying the intensity of a channel in a step

- select the Chaser mode and enter its number



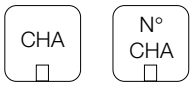
- push the «—> STEP» key to the position of the step.

- manipulate the individual fader of the desired channel (you must display its present value before starting to modify it).

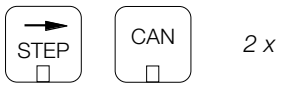


ADB
Lighting Technologies

Cancelling one or more step(s)

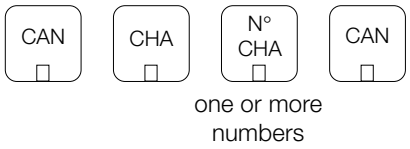


- select the Chaser mode and enter its number



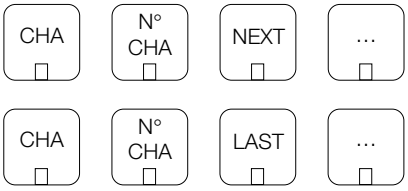
- push the «—>STEP» key to the position of the step to be cancelled, and press the «CAN» key twice (repeat these operations to cancel the other steps in the same Chaser).

Cancelling one or more Chasers



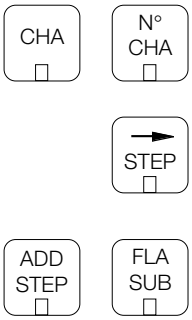
- push the «CAN» key
- select the Chaser mode and enter its number
- push the «CAN» key again

Selection of successive Chasers



- NEXT calls the Chaser following the one displayed
- LAST calls the Chaser preceding the one displayed

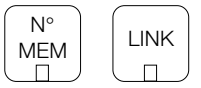
Transferring from one Submaster in a Chaser step or adding a step containing this Submaster



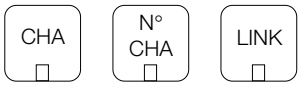
- select the Chaser mode and enter its number
- push the «—>STEP» key to the step preceding the step to be added, or to the step to be modified
- push the «ADD STEP» to open a new step if applicable (in case of addition)
- push the flash key of the Submaster which will participate in this step.

Insertion of a Chaser in the sequence of the Memories

- call the Memory after which you wish to insert the Chaser and push the «LINK» key



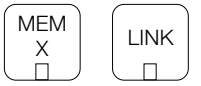
- call the Chaser and push the «LINK» key again



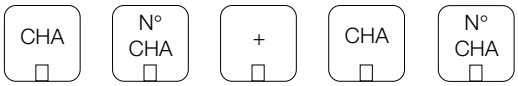
Note: you may record 20 «LINK»s maximum.

Inserting several Chasers and changing the sequence of the memories.

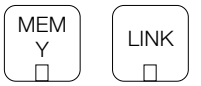
- call the Memory after which you wish to insert the Chaser and push the «LINK» key.



- call the Chasers.



- call the Memory to which you then wish to be linked if applicable, and then push the «LINK» key.

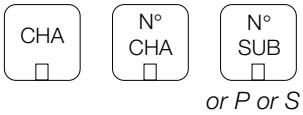


Cancelling a LINK

- push the following in order:

Restitution of Chasers in a Submaster , Stage Submaster, or Preset Submaster

- select the Chaser, push the key of the Submaster or P or S Submaster desired. When a Chaser is restituted in a Submaster, the LED of the Flash key of this Submaster blinks.



- NEXT acts to call the Chaser following the one displayed.

- LAST acts to call the last Chaser displayed

Retaking control of a Chaser loaded in a Submaster

CHA □ N° SUB □

- push the keys as shown

This way, you may quickly re-select the Chaser without having to enter its number again.

Remark:
This manipulation is also valid if a Special Effect has been loaded in the Submaster.

Visualisation of the content of Chasers

MON □ CHA □ N° CHA □

- push the «MON» key and select the Chaser
- the green LEDs of the channels used in this Chaser light up

The displays show:

CHA	1	2	3	4	5	6	7	8	9	10	11	12
%	0	0	48	0	0	0	0	52	0	0	0	0

VISUALISATION
CHASE : C1 (*) (**) (***)

- to scroll page:

NEXT □

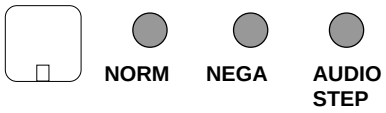
- NEXT: acts to call the Chaser after the one displayed

LAST □

- LAST: acts to call the last Chaser preceding the one displayed

Manipulating Chaser modes

- select the lighting mode by pressing the Chaser mode key successively. The LED lights up above the corresponding mode and the symbol appears on the right built-in display.

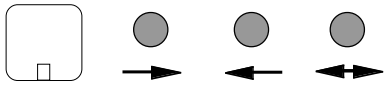


- in the same way, select the type of movement

→ = forward

← = backward

↔ = back and forth

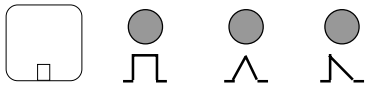


- in the same way, select the type of profile

⎍ = abrupt

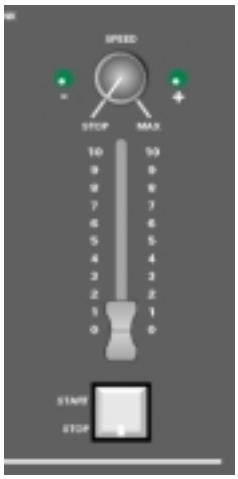
⩚ = stepless

◺ = sawtoothed



- while the Chaser is running, it is possible to modify its speed. To do this, use the speed potentiometer.

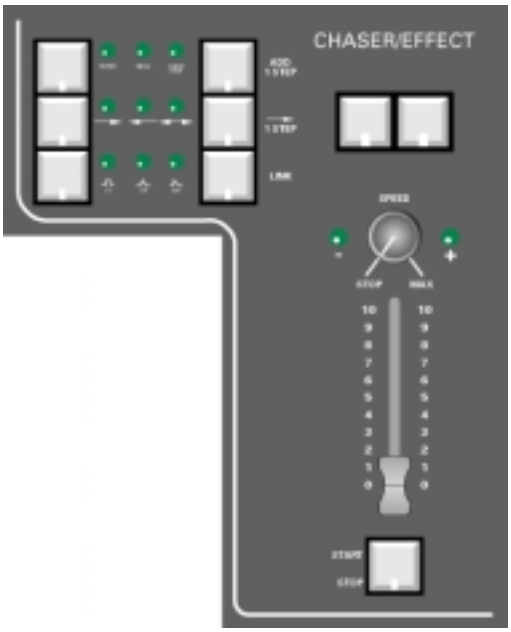
  To activate it, place it in position 0 (index in the center).
  At this moment, the LEDs will light up. By turning the potentiometer to the left, you slow down the movement, until it stops when you reach the STOP position.
  By turning it to the right, you speed up the movement until you reach an instantaneous passage from one step to another.



NOTE:
The operations mentioned above are active in real time on the Chaser selected in the CHASER mode and also on its restitutions in Submasters or in the Transfer.
To exit the CHASER mode, just push the «CHASER» key again.

- While the Chaser is running, it is possible for you to modify its intensity by the effect level fader.

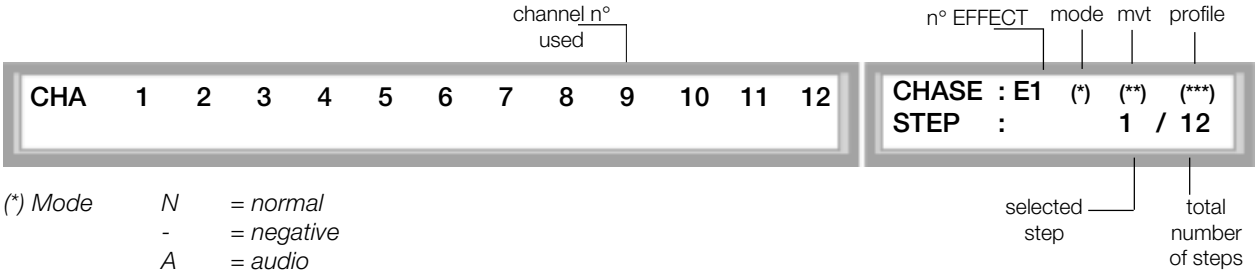
- use the START / STOP key to start and stop a Chaser.



Special Effects

This mode gives access to 9 pre-programmed Special Effects which may run simultaneously.
Each effect may contain all channels.

After selecting the Special Effect mode, the displays show



(*) Mode *N* = *normal*
\- = *negative*
A = *audio*

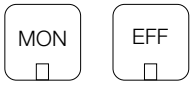
(**) Mvt → = *forward*
← = *backward*
↔ = *back and forth/ pendulum*

(***) profile *CT* = *abrupt*
CR = *stepless*
SW = *sawtooth*

The list of the channels is by series of 12. This list may be paginated by manipulating the up and down keys of the DISPLAY mode.

Visualising the list of Special Effects

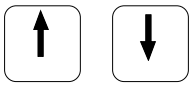
- push the «MON» and «EFFECT» keys



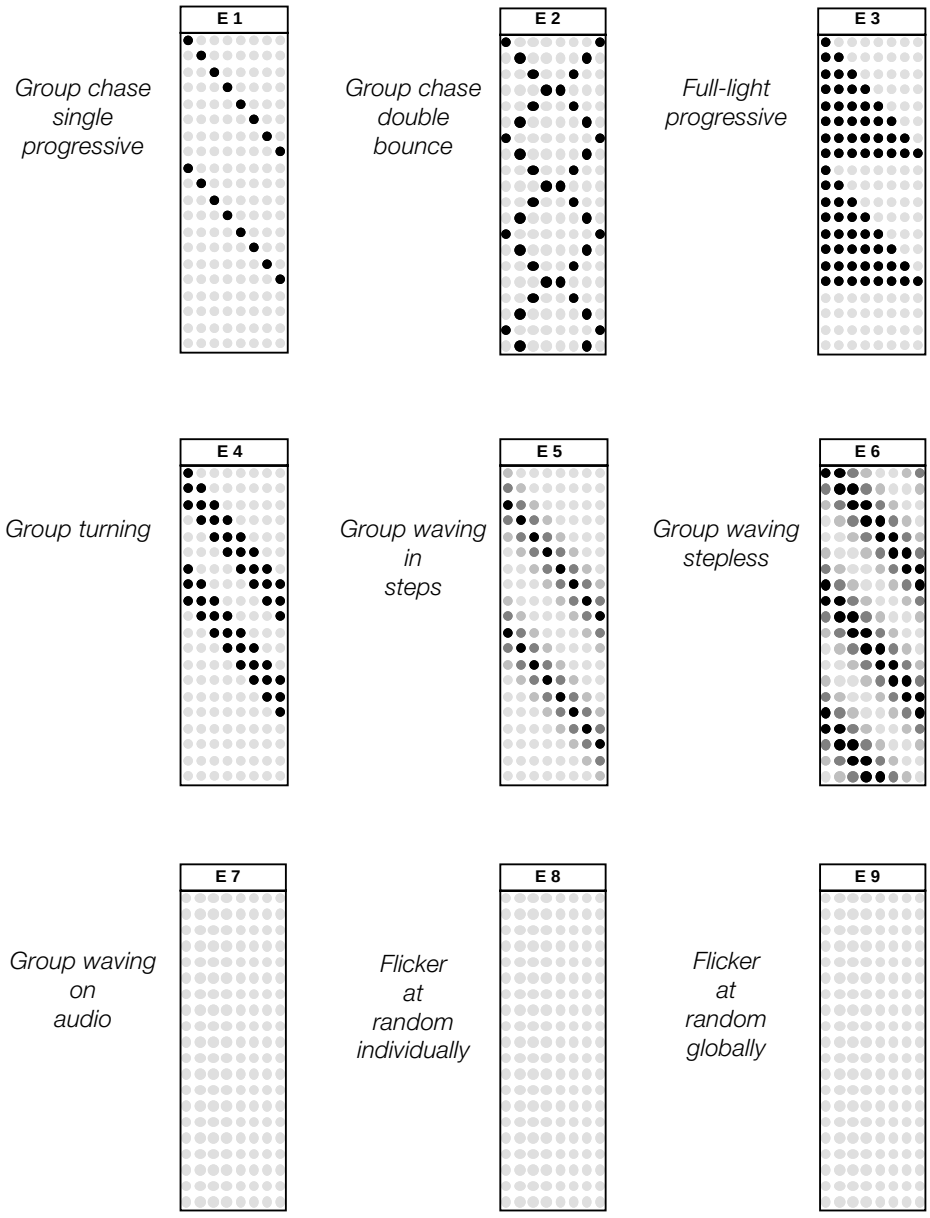
The displays show:

E1 - GROUP CHASE SINGLE PROGRESSIVE E2 - GROUP CHASE DOUBLE BOUNCE	VISUALISATION EFFECT LIST

- to scroll page:



- the 9 pre-programmed Special Effects are:



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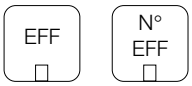
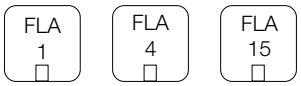
Building a Special Effect



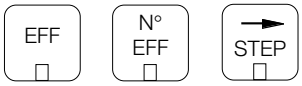
Select the Special Effect mode and enter the Special Effect number.
Note that to construct such an effect blindly, the Effect level fader must be at 0%.



- Push the flash keys of the channels which will participate in the effect in the order of their participation.
  Each time you press, the green LED of the selected channel lights up
- Pushing the flash key a second time deselects the channel.

Note :
A channel can appear only once in a Special Effect according to the input order.

Visualisation of a Special Effect step by step

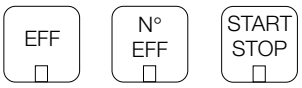


- The green LED of the step lights up

Execution of a Special Effect

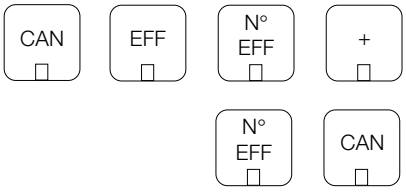
- Position the MASTER fader at 100% and push the «START» key of the EFFECT mode.

Blind simulation of a Special Effect



- Select the Special Effect and push the «START» key. The LED simulates the Effect
- Pressing the «START» key a second time stops the Effect on one step.
- Pushing the «START» key again restarts the effect

Cancelling one or more Special Effects



- push the «CAN» key
- select the effect mode and enter the Special Effect numbers
- push the «CAN» key again

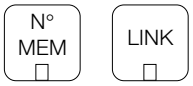
Selection of successive Special Effects

- NEXT calls the effect following the one displayed

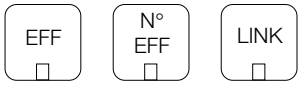
- LAST calls the effect preceding the one displayed

Insertion of a Special Effect in the Memory sequence

- call the Memory after which you wish to insert the Special Effect and push the «LINK» key

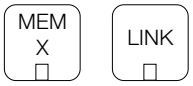


- call the effect and push the «LINK» key again

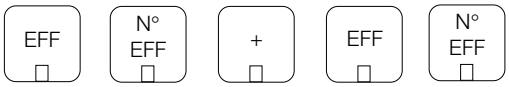


Insertion of several effects in the Memory sequence

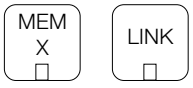
- call the Memory after which you wish to insert the Special Effects and push the «LINK» key (max. 3 effects).



- call the Special Effects



- call the Memory to which you wish to be linked later if applicable, and push the «LINK» key



Remark:
You may also mix Special Effects and Chasers.

Cancelling a LINK

- push the following keys in order:

ADB
Lighting Technologies

Restitution of Special Effects in a Submaster, Stage Submaster, or Preset Submaster

EFF | N° EFF | N° SUB *or P or S*

- select the Special Effect, push the key of the Submaster, or S or P key desired.
  When an Effect is restituted in a Submaster, the LED of the flash key of this Submaster blinks.

NEXT

- NEXT acts to call the Special Effect following the one displayed

LAST

- LAST acts to call the Special Effect preceding the one displayed

Retaking control of a Special Effect loaded in a Submaster

EFF | N° SUB

- push the keys

This way, you may quickly re-select the effect without having to enter its number again.

Remark:
This manipulation is also valid if a Chaser has been loaded in the Submaster.

Visualisation of the content of the effects

EFF | N° EFF

- select the effect. The green LEDs of the circuits participating in the Special Effect light up.

The displays show:

CHA 1 2 3 4 15 24 7 8 9 22 6 12 CHA 36	EFFECT : E1 (*) (**) (***) STEP : 1 / 12

↑ ↓

- to scroll page:

NEXT

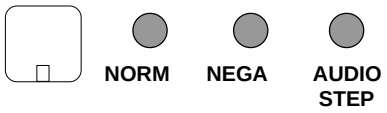
- NEXT acts to call the Special Effect following the one displayed

LAST

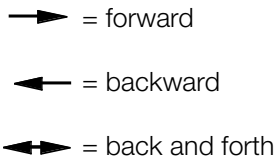
- LAST acts to call the Special Effect preceding the one displayed

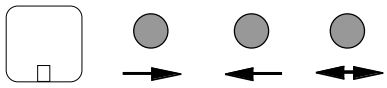
Manipulating Special Effect 1 to 6

- Select the mode of illumination by repeatedly pushing the key. The LED lights up above the corresponding mode and the symbol appears on the display

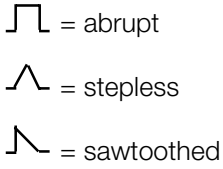


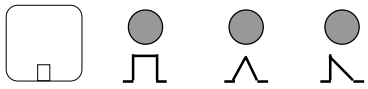
- in the same way, select the type of movement





- in the same way, select the type of profile

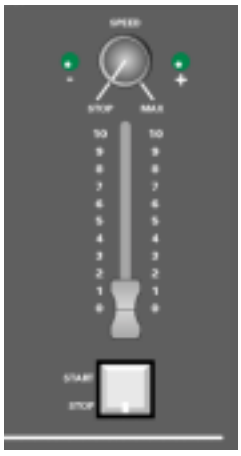




- While the Special Effect is turning, it is possible to modify its speed. To do this, use the speed potentiometer.

  To activate it, place it in position 0 (index in the center).
  At this moment, the two LEDs light up.

  By turning the potentiometer to the left, you slow down the movement until it stops when you reach the STOP position.
  By turning it to the right, you accelerate the movement.



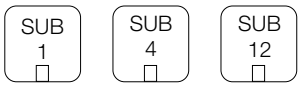
Note:
The operations mentioned above are active in real time on the selected Special Effect in the EFFECT mode and also on its restitutions in Submasters or in the Transfer.
To exit the EFFECT mode, just push the «EFFECT» key again.

- While the effect is running, it is possible to modify its intensity by the Effect level fader.

- use the START / STOP key to start and stop a Special Effect

Sound modulation of a Submaster contents

- push the «SOUND» key and keep it pushed

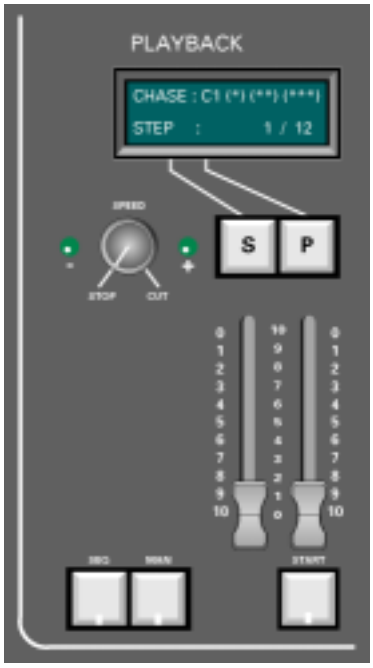


- push the keys of the Submasters desired, and release the «SOUND» key

- proceed in the same way to deselect a Submaster in «SOUND» mode.

Note :
If at least one of the Submasters is in «SOUND» mode, the «SOUND» key blinks and «SND» is displayed below the number of the Submaster.
This function is not accessible if a Special Effect or a Chaser has been loaded in the Submaster. In the same manner, it is not possible to load a Special Effect or Chaser in a Submaster in SOUND mode.

Playback



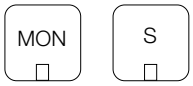
The Playback is intended for progressive replacement of a lighting state on the stage by another lighting state which is in the Preset Submaster.

This operation takes place in the times memorised for moving down on stage and up in the state in Preset.
The transfer can be carried out either manually, by manipulating a lever, or automatically, by pressing a key which starts the crossfade.

This mode permits making corrections for the Playback speed. It also permits performing rough transfers and stopping the current crossfade.

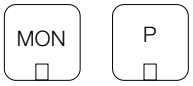
Visualisation of the contents of the Stage Submaster

- push the «MON» and «S» key



Visualisation of the contents of the Preset Submaster

- push the «MON» and «P» key



Now, the green channel LEDS and the built-in displays show the contents of the Submasters.

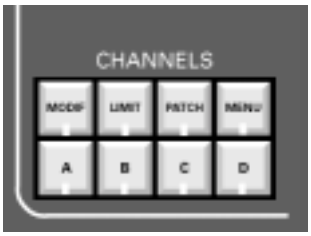
CHA	1	2	3	4	5	6	7	8	9	10	11	12
%	0	0	FF	0	0	0	0	0	0	0	0	0

VISUALISATION
STAGE

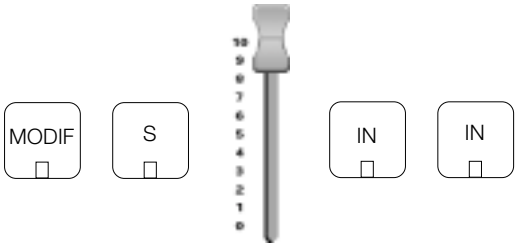
or PRESET

ADB
Lighting Technologies

Modification of a Lighting State in the Playback Stage Submaster



Select the MODIF mode.
The corresponding red button LED blinks.

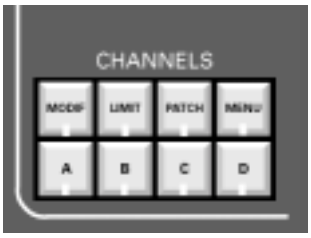


Push on the "S" key to select the "STAGE" submaster and move the fader of the individual channel to be modified until it displays its current intensity value (the display shows a "MOVE UP" or "MOVE DOWN" message depending on the manipulation to be performeb).
Then adjust the desired intensity for this channel.
As soon as you move the fader, the corresponding channel page appears on the left built-in display and the intensity in digits appears under the number of the channel.

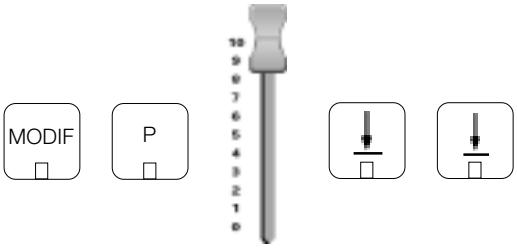
Push IN twice if the memory in the Stage Submaster shall be modified.

If only the Stage Submaster itself shall be modified, confirm the operation with "MODIF".
In this case, the memory in the Stage Submaster is not modified. The memory number blinks to indicate a difference between the submaster and the memory.

Modification of a Lighting State in the Playback Preset Submaster



Select the MODIF mode.
The corresponding red button LED blinks.



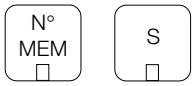
Push on the "P" key to select the "PRESET" submaster and move the fader of the individual channel to be modified until it displays its current intensity value (the display shows a "MOVE UP" or "MOVE DOWN" message depending on the manipulation to be performeb).
Then adjust the desired intensity for this channel.
As soon as you move the fader, the corresponding channel page appears on the left built-in display and the intensity in digits appears under the number of the channel.

Push IN twice if the memory in the Preset Submaster shall be modified.

If only the Preset Submaster itself shall be modified, confirm the operation with "MODIF".
In this case, the memory in the Stage Submaster is not modified. The memory number blinks to indicate a difference between the submaster and the memory.

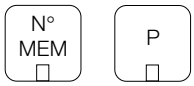
Restitution of a Memory in the Stage Submaster

- Enter the number of the Memory and push the S key.



Restitution of a Memory in the Preset Submaster

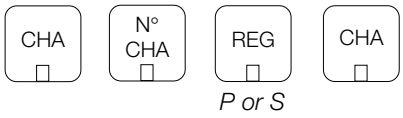
- Enter the number of the Memory and push the P key.



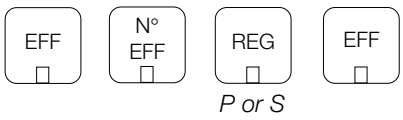
Remark:
this operation may be executed even if the crossfade is running.

Restitution of Chasers or Special Effects in the Stage Submaster or Preset Submaster

- Select the Chaser, push the key of the S or P Submaster desired, and push the «CHASE» key again.



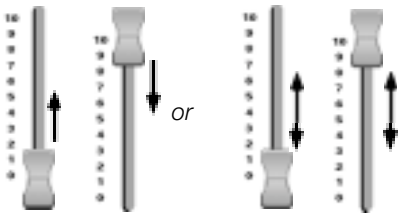
- Select the Special Effect, push the key of the S or P Submaster desired, and push the «EFFECT» key again.



Manual transfer without sequential call of the following Memory

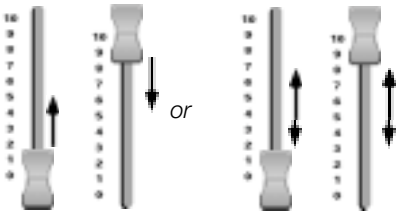
If necessary, push the SEQ key to deactivate the sequential mode (the LED of the key must be extinguished) and push the «MAN» key to go to manual mode (the LED of the key must light up).

By manipulating the lever of the fader of Submaster S, you diminish the intensity of the channels restituted on Stage, and by activating the lever of the fader of the P Submaster, you send the channels of this Submaster on Stage.
You can activate these levers separately to obtain either a passage by a blackout, or a double state on the Stage. By manipulating the two levers simultaneously, you will obtain a gradual transfer in the time of your manipulation.



Note that as long as you continue these manipulations, the transfer only acts on the two memories that you have restituted.

SEQ



Manual transfer with sequential call of the following Memory

Push the SEQ key to activate the sequential mode (the LED of the SEQ key must light up but not blinking).
You can manipulate the levers of the fader separately or simultaneously as described above to obtain either a passage by a blackout, or a double state on the Stage, or a gradual transfer in the time of your manipulation.
At the end of the transfer, the Memory which was in Preset and which has come progressively onto the Stage, is automatically replaced by the Memory or effect following the sequence. This sequence is that of the order of the increasing numbers.

MAN

Automatic transfer without sequential call of the following Memory

Push the MAN key to deactivate the manual mode (the LED of the key must be extinguished). The «SEQ» LED is supposed to be extinguished.

START

Push the START key to start the transfer (the LED of the START key lights up). From this moment on, the lighting state from the Stage Submaster is progressively replaced by the state from the Preset Submaster, taking into account the up and Down times attributed to the Preset Submaster.
At the end of the transfer, the Memory which was in Preset and which has progressively appeared on the Stage, is automatically replaced by the Memory or Effect after the sequence. You must push the START key once more to start the next transfer.

SEQ MAN

Automatic transfer with sequential call of the following Memory

You can also prepare to start a series of automatic sequential transfers by pressing the START key once.
Push the SEQ key to activate the sequential mode (the LED of the key must be lit up), and push the MAN to deactivate the manual mode (the LED must be extinguished).
Push the START key to start the transfer (the LED of the START key lights up).
From this moment, the lighting state coming from the Stage Submaster is progressively replaced by the state coming from the Preset Submaster, taking into account the Up and Down times attributed to the Preset Submaster.
At the end of the transfer, the Memory which was in Preset and which has appeared progressively on Stage, is automatically replaced by the following Memory or Effect in the sequence.
To start the new Playback, push the «START» key again.

START

START

Auto Sequence Playbacks

It is also possible to perform fully automatic Playbacks. The Playback starts with the Memory in the Stage Submaster and stops at the last Memory available in the list of Memories.

Push on the SEQ button, if necessary several times in order to make the built-in red LED blinking. Auto Sequence mode is now active.

Now push on the Playback START key. The Auto Sequence Playback begins.

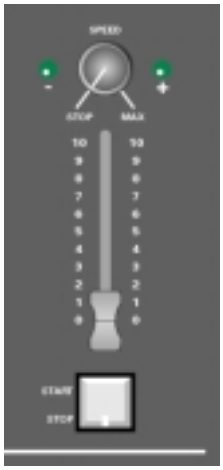
In order to pause the Auto Sequence Playback, depress the START key again.

To proceed when a Auto Sequence show is paused, depress the START key again.

To stop an Auto Sequence Playback push on the SEQ button in order to de-activate the mode. The current crossfade will be finished first before the Auto Sequence Playback stops.

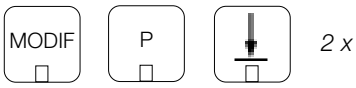
In order to have eternal Auto Sequence shows the last memory must be linked to the first memory.

Manipulating the Playback



It is possible to modify the speed of the execution of a transfer.
The correction always acts on the Preset Submaster (never on the Stage Submaster), before the start-up or during the evolution of the playback.
To do this, use the transfer speed potentiometer.
To activate it, place it in position 0 (index in the center).
At this moment, the two LEDs light up. By turning the potentiometer to the left, you slow down the movement until you stop by arriving at the STOP position.
By turning it to the right, you speed up the movement until you obtain an instantaneous transfer.

To memorise this modification



If a Memory is restituted in the Preset Submaster and you modify the time as mentioned above, you can modify the times in the restituted Memory directly and without re-selecting the Memory, by means of the opposite manipulation:

Note:
You can decide to visualise permanently the contents of the Memory loaded in the Preset Submaster «P» (see MENU chapter).

Storage

Instantaneous recording of the desk contents

Insert the Memory card in the right-hand slot on the rear side of the device.

Push the «TO CARD» key four times, in order to store the following information

2 x

1 - the memories, the Banks, and the links
2 - the programming of the softkeys (macros), external lines, and MIDI configuration
3 - the Chasers and effects
4 - the patch and the limits of the Memory mode

If you do not wish to record all the data on the card, it is necessary to change the configuration (see MENU chapter on «Selective Data Storage»).

Note :
If one of the files has been deselected in the context of selective storage, the «TO CARD» operation will nevertheless erase the possible content of this file on the card.

The displays show :

iIf the card is absent

	CARD NOT PRESENT

if the card already has a contents

(*)

00128 **CARD CONTAINS DATA**	**TO CARD * 3**

(*) Memory capacity of the card used (128K, 256K, etc.).

after recording

	STORAGE ON CARD COMPLETED

Remark:
Upon each writing, compare the data on the desk to those on the card. In case of malfunction, an error message appears.

Enter any mode to exit the recording function on the card.

Instantaneous reading of the contents of a card

Insert the card in the right-hand slot on the rear side of the device.

Push the «FROM CARD» key 4 times, in order to obtain the following information:

FROM CARD *4 x*

1 - the memories, Banks and links
2 - the programming of the softkeys (macro), external lines and MIDI configuration
3 - the Chasers and effects
4 - the patch and limits of the Memory mode

If you do not wish to change all the data on the card, it is necessary to change the configuration (see MENU chapter at «Selective Data Storage»).

Note :
if one of the files is empty on the card, the «FROM CARD» operation will not erase the possible contents of this file in the desk. The contents of the Submasters are not effected.

The displays show:

	CARD NOT PRESENT

If the card is absent after recording

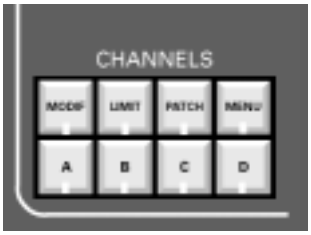
number of memories — number of Banks — number of Chasers — number of effects

MEMORIES : * BANKS : ** CHASERS : * EFFECTS : ***	**RETRIEVAL FROM CARD**
KEYS : ** LINES : * MIDI : * PATCH : 1 / 1 LM LK**	**COMPLETED**

number of programmed softkeys — number of programmed external lines — see MIDI chapter — patch 1 / 1 — limits — links

Note :
Upon each reading, compare the data from the desk to those on the card. In case of malfunction, an error message appears.

Enter any mode to exit the reading function of the card.



Menu

CANTOR offers a series of additional functions via its MENU.

System Set-Up

- choice of channel set-up mode
  24 channels - 2 Presets - 1 fader page
  48 channels - 1 Preset - 1 fader page
  96 channels - 1 Preset - 2 fader pages
  (CHANNEL SET-UP)

- activation / deactivation of audio beep signal
  (BEEP ON OR OFF)

- visualisation of Memory in Preset Submaster
  (MEMORY PREVIEWING)

- assigning dimmer laws
  (CURVE SELECTION)

- linking two desks for fader extension for channel set-up mode 3 (96 channels)
  (TWO CANTORS)

Selective Storage

- selection of desk data to be stored on a Memory card
  (STORAGE)

Softkeys

- programming macros
  (SOFTKEYS)

External Lines

- programming external line commands
  (EXT.LINES)

MIDI

- programming MIDI IN and OUT events; MIDI set-up
  (MIDI)

RS232 Peripherals

- selecting RS232 peripherals: monitor on / off printer data select (PERIPH.)

Colour Changer

- selecting Colour Changer mode and channels (COLOUR)

Selecting the MENU mode

To select CANTOR's menu, push on the MENU key.

The left built-in desk display shows the sub-menus available. The right display shows the possible selections.

1) SYSTEM	**3) SOFTKEYS**	**5) MIDI**	**7) COLOUR**	**TO SELECT :**
2) STORAGE	**4) EXT. LINES**	**6) PERIPH.**		**DEPRESS (1 - 7)**

The following selections can be made:

- SYSTEM : push 1

- STORAGE : push 2

- SOFTKEYS : push 3

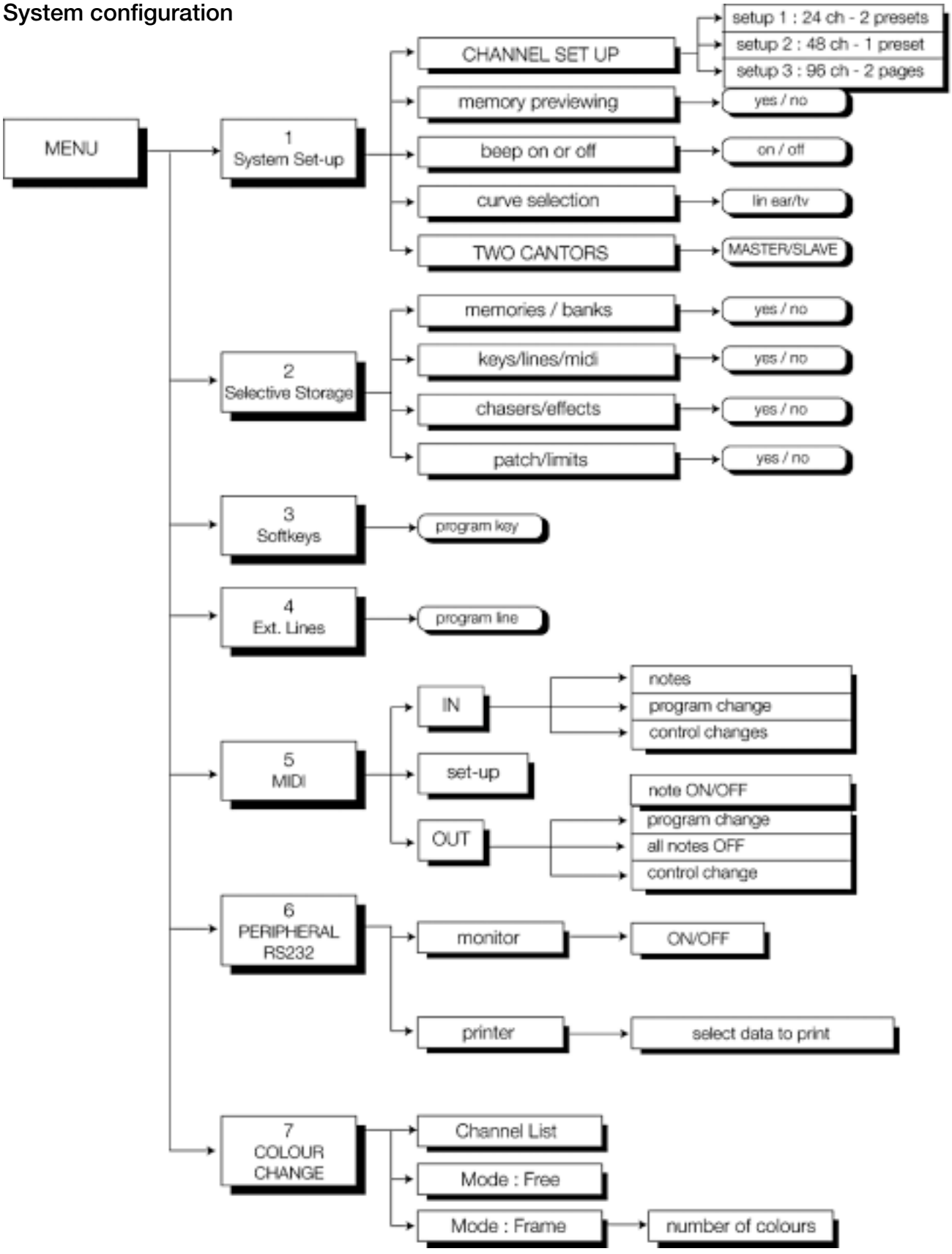
- EXT. LINES : push 4

- MIDI : push 5

- PERIPH. : push 6

- COLOUR : push 7

System configuration



Reminder: In order to select this sub-menu, press

MENU □ 1

The displays show:

1) CHAN. SET-UP 3) BEEP 5) TWO CANTORS **2) MEM. PREVIEW 4) CURVE SELECTION**	**TO SELECT :** **DEPRESS (1 - 5)**

In order to select

- CHANNEL SET-UP : push 1 — 1
- MEMORY PREVIEW : push 2 — 2
- BEEP : push 3 — 3
- CURVE SELECTION : push 4 — 4
- TWO CANTORS : push 5 — 5

Selecting the channel set-up (1-3)

CANTOR can operate in three different channel set-up modes:

SET-UP 1: 24 channels - 2 Presets - 1 fader page
- the faders 25 to 48 control the desk channels of the second Preset (Preset B)
- for the functions LIMIT, MODIFY and EFFECTS only the faders 1-24 are operational
- the Flash keys 1-24 and 25-48 and the built-in LEDs work in parallel

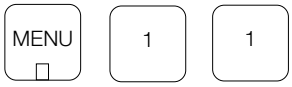
SET-UP 2: 48 channels - 1 Preset - 1 fader page
- Preset Master fader A and its corresponding Flash button are not operational
- Preset Master fader B controls all 48 channels

SET-UP 3: 96 channels - 1 Presets - 2 fader pages
- Preset Master fader A and its corresponding Flash button are not operational
- Preset Master fader B controls all 96 channels
- the fader page toggle key E operates for swapping between the two fader pages 1 and 2

- the individual green channel LEDs indicate a difference between a channel fader position and its actual outgoing DMX value
- the analogue option and Memory Previewing are not operational in this mode

Changing the channel set-up mode does not modify the contents of CANTOR's internal Memory. Thus, Memories, Submasters (also Stage and Preset), Banks, Patch, Limits and Effects remain unaffected.

Example:
Changing from set-up mode 2 to 1 a channel 32 in a Submaster is still driven out on the DMX output. To erase this channel, either the Submaster contents has to be erased completely or one has to return back to set-up mode 2 in order to perform the modification in the corresponding Submaster.



To access the channel set-up selection, the following key sequence is necessary

The displays show

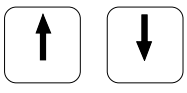
SETUP 1 : 24 CHANNELS 2 PRESETS **1 FADERPAGE DEPRESS (UP - Dn)**	**TO CHANGE :**

or

SETUP 2 : 48 CHANNELS 1 PRESET **1 FADERPAGE DEPRESS (UP - Dn)**	**TO CHANGE :**

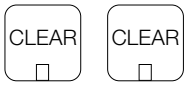
or

SETUP 3 : 96 CHANNELS 1 PRESET **2 FADERPAGES**	**TO CHANGE :** **DEPRESS (UP - Dn)**

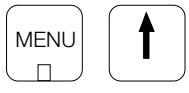


To select use the Up and Down keys:

Note:
after a reset, the desk is in channel set-up mode 2



To exit, push the CL key twice

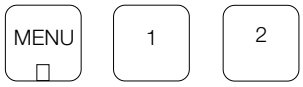


To reach a higher menu level, type in

Displaying the contents of the Preset Submaster (Memory Previewing)

In channel set-up mode 1 and 2, it is possible to display the contents of the Playback's Preset Submaster via the green channel LEDs. The contents of the Stage Submaster is always displayed via the red channel LEDs.

To access the sub-menu, press



The displays show

MEMORY LOADED IN PRESET IS DISPLAYED ON GREEN LEDS NO	TO CHANGE: DEPRESS (Up - Dn)

or

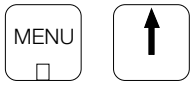
MEMORY LOADED IN PRESET IS DISPLAYED ON GREEN LEDS YES	TO CHANGE: DEPRESS (Up - Dn)

To select or deselect this function, use the pagination keys.

Note :
after complete initializing of the desk, the contents of the Preset Submaster is not displayed on the green LEDs.

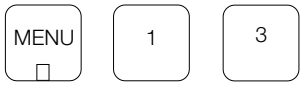
To exit, push the «CL» key twice.

To reach a higher menu level, type in



Selecting the acoustical Beep Signal

To access the sub-menu, press



The displays show

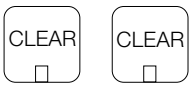
BEEP IS OFF	TO CHANGE: DEPRESS (Up - Dn)

or

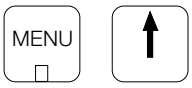
BEEP IS ON	TO CHANGE: DEPRESS (Up - Dn)

To select, use the Up and Down keys:

Note:
after a reset of the desk, the beep signal is switched on



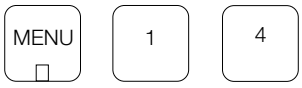
To exit, push the CL key twice



To reach a higher menu level, type in

Dimmer Curve Selection

CANTOR can either drive out the desk channel's values linearly or following a so called "TV Curve". The latter is a non-linear dimmer curve.



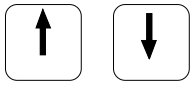
To access the sub-menu, press

The displays show

CURVE SELECTED : LINEAR	**TO CHANGE:** **DEPRESS (Up - Dn)**

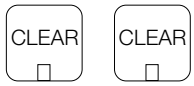
or

CURVE SELECTED : TV **ON**	**TO CHANGE:** **DEPRESS (Up - Dn)**

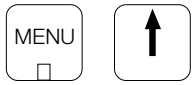


To select, use the Up and Down keys:

Note:
after a reset of the desk, the dimmer curve LINEAR is selected

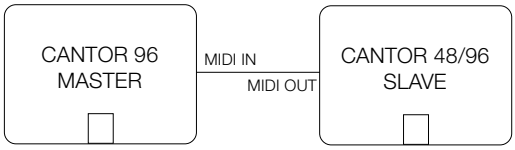


To exit, push the CL key twice



To reach a higher menu level, type in

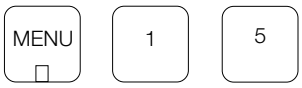
Linking Two CANTORs



In channel set-up mode 3 (96 channels) two CANTORs can be linked together via the MIDI port in MASTER-SLAVE mode.

On the slave machine, only the individual faders and Flash buttons are operational. All Memory mode functions are only available on the Master desk. The purpose of the function is to offer 96 faders for 96 channels.

To access the sub-menu, press



The displays show

LINKING TWO CANTORS : **CANTOR IS MASTER**	**TO CHANGE:** **DEPRESS (Up - Dn)**

or

LINKING TWO CANTORS : **CANTOR IS SLAVE**	**TO CHANGE:** **DEPRESS (Up - Dn)**

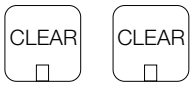
or

LINKING TWO CANTORS : **LINKING OFF**	**TO CHANGE:** **DEPRESS (Up - Dn)**

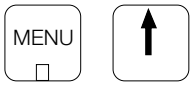
To select, use the Up and Down keys:

Note:
after a reset of the desk, the Linking function is set to off

To exit, push the CL key twice



To reach a higher menu level, type in



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Selective Data Storage

Data to be stored on a Memory card or on an optional PC-Link device can be selected.

The user can select to store
- the Memories, Banks and Memory Links
- programming of Softkeys, External Lines and MIDI
- Chasers and Special Effects
- Patch and Limits

MENU 2 — To access the sub-menu, press

The displays show

1) MEMORIES/BANKS : YES **2) KEYS/LINES/MIDI : YES** **3) CHASERS/EFFS : YES** **4) PATCH/LIMITS : YES**	**TO CHANGE:** **DEPRESS (1 - 4)**

1 2 3 4 — To select, type in the corresponding sub-menu item numbers 1-4. Data storage for this item is than switched on or off:

Note:
after a reset the desk, all data is selected to be stored.

CLEAR CLEAR — To exit, push the CL key twice

MENU ↑ — To reach a higher menu level, type in

Programming Softkeys / Macros

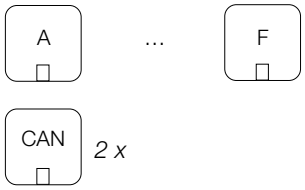
CANTOR offers six Softkeys A - F to be programmed with any desk key sequence with up to 18 commands. When pushing on a programmed Softkey, the programmed key sequence will then be performed.

MENU 3 — To access the sub-menu, press

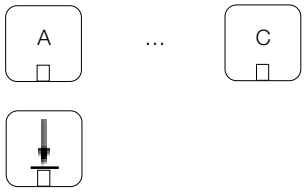
The displays show

KEY :	**TO PROGRAM : DEPRESS (In)** **TO ERASE : DEPRESS 2 * (CAN)**	**PRESS A KEY,** **PROGRAM OR ERASE**

In order to erase a Softkey, push on the CANcel key twice after you have selected a Softkey.



In order to program a Softkey push on one of the keys A-F and confirm with the IN key.



The displays show

softkey

KEY : X :	P1	TO RECORD : DEPRESS 2 * (Menu)

or, if the Softkey is already programmed (example)

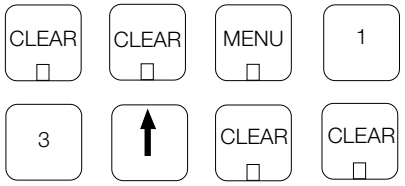
KEY : X : IN 1 2 3 4 P48 P46 P46 P46 P37	P2	TO RECORD : DEPRESS 2 * (Menu)

In order to program the key, press the keys you want to add to the Macro sequence in the order the desk manipulations should be performed afterwards.

Examples:

1. Loading Memory 1 into the Playback Preset Submaster

2. Disabling the Beep signal



3. Erasing Submasters

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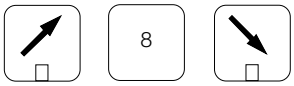
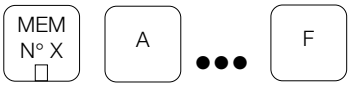
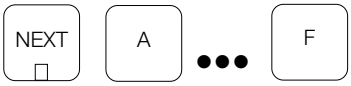
Lighting Technologies



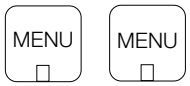
4. Assigning an Up and Down Time of 8 seconds to all Memories



To effect the operation, leave the menu and select the first Memory, and push on the corresponding Softkey

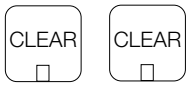


Now you can assign the times to the remaining Memories via the key sequence

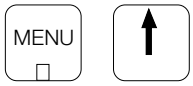


To confirm the programming of a key sequence , press the MENU key twice

Note:
it is not possible to program softkey ‘E’ if channel set-up 3 is selected, as it is then pre-defined to function as the fader pages' toggle key. But, a once programmed sequence for the softkey ‘E’ that was defined when channel set-up 1 or 2 was selected, will still be available when leaving the channel set-up 3 mode and re-selecting channel set-up 1 or 2.



To exit the Softkey sub-menu, push the CL key twice



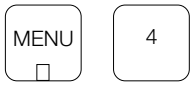
To reach a higher menu level, type in

Note:
you first have to exit the programming procedure via MENU, MENU in order to use MENU ↑ or CL CL to quit the sub-menu.

Programming External Lines

CANTOR can be remote controlled via 8 External Lines. Therefore the External Line input at the desk's rear panel has to be connected. In order to send a trigger signal to CANTOR via this input, a corresponding electrical contact has to be closed between pin 9 and one of the pins 1-8. CANTOR can now be programmed to perform desk key manipulations with up to 18 commands.

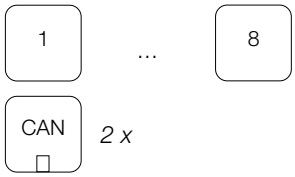
To access the sub-menu, press



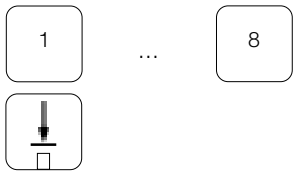
The displays show

LINE : TO PROGRAM : DEPRESS (In) **TO ERASE : DEPRESS 2 * (CAN)**	**SELECT LINE THEN,** **PROGRAM OR ERASE**

In order to erase an External Line programming push on the CANcel key twice after you have selected an External Line number 1-8 via the decimal keyboard.



In order to program an External Line, push on the IN key (after having selected an External Line 1-8 via the decimal keyboard.



The display now show

External line

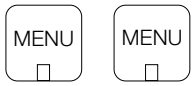
LINE : X :	**P1**	**TO RECORD :** **DEPRESS 2 * (Menu)**

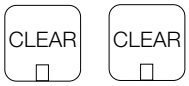
or, if the External Line is already programmed (example)

LINE : X : IN 1 2 3 4 P48 P46 P46 **P46 P37**	**P2**	**TO RECORD :** **DEPRESS 2 * (Menu)**

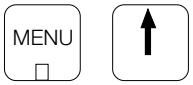
In order to program the Line now, press the keys you want to add to the External Line Macro sequence in the order the desk manipulations should be performed afterwards.

To confirm the programming of a key sequence , press the MENU key twice





To exit the External Line sub-menu, push the CL key twice



To reach a higher menu level, type in

Note:
you first have to exit the programming procedure via MENU, MENU in order to use MENU ↑ or CL CL to quit the sub-menu.

Remark :
If you programme a line with a flash key, the closing and re-opening of the contact will be detected. You can also start flashes at a distance.

After complete initializing of the desk, all the Line programming is erased.
The contents of the lines is stored on the card (except if you have deselected the corresponding group, see «Selective data storage»).
The examples of programming given for the macros (see programming Softkeys) are also valid for External Lines.

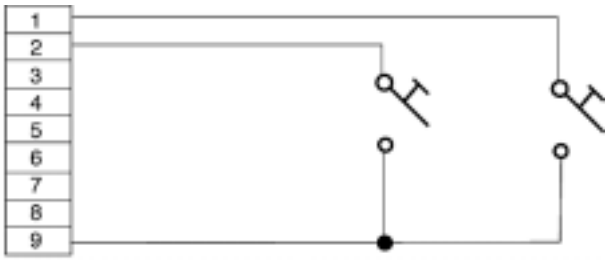
Some technical details

The command device will be a momentary closure, low tension type.

The system necessitates 2 wires per command, placed anywhere at a maximum distance of 250 m.

The input connector on the desk is a DEO9-S where pins 1 to 8 correspond to the command returns and the 9 pin is common.

The wiring is performed in conformity with the diagram below.



cable: 2 x 0.34 mm

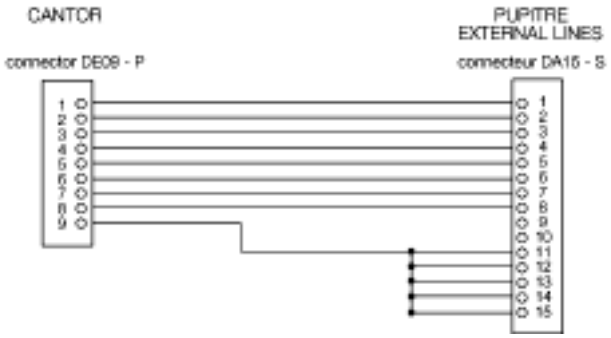
For more flexibility in your installation, you can intercalate a bypass box between the CANTOR desk and the starting systems of the external commands.

CANTOR

A small desk connected to the input of the external lines is available.
It is equipped with 10 keys, marked from 0 to 9, from ADB.

The interconnection is by means of a 10 x 0.5 cable equipped with DEO9 male connectors and DA15 female connectors in conformity with the above diagram.
The box includes two attachments holes permitting wall attachment.

Presentation according to the sketch below



Réf. : PUP / EXT / LIN

Code ADB : 1153.34.060

Peripheral

CONTENTS

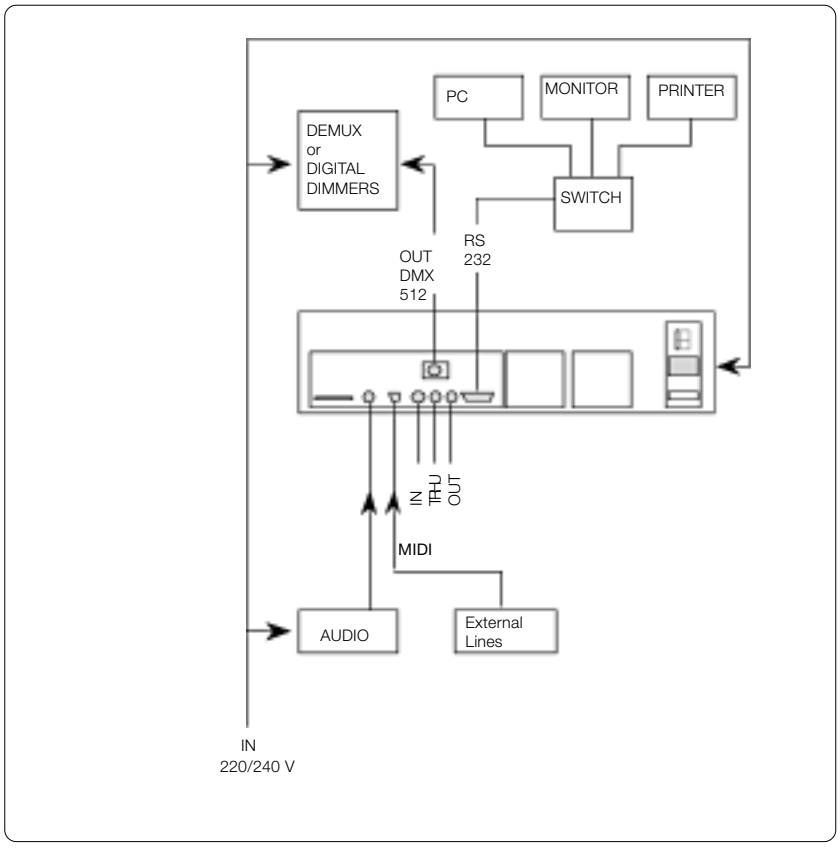
Optional RS232/SVGA port Peripheral 79

Optional RS232/SVGA port Peripherals

CANTOR can handle different peripherals via the RS232/SVGA port:

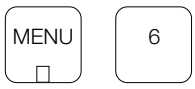
- monitor
- PC-Link to standard computer

As CANTOR has only one RS232/SVGA output, the devices can either only be connected separately or via a data switch, where more than one device can be connected at a time. The user then has to select manually via the switch which device should be active.



The monitor and printer are handled via menu 6.

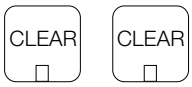
To access the sub-menu, press



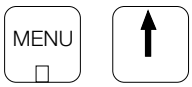
The displays show

1) MONITOR **2) PRINTER**	**TO SELECT** **DEPRESS (1 - 2)**

To exit the sub-menu, push the CL key twice

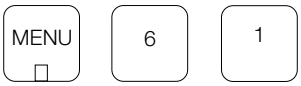


To reach a higher menu level, type in



Optional Monitor

After the monitor is connected to the RS232 port, the port has to be activated. This is done via the menu.



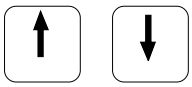
To access the sub-menu, press

The displays show

EXTERNAL MONITOR AT RS232 IS OFF	**TO SELECT : DEPRESS [UP - Dn]**

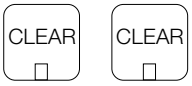
or

EXTERNAL MONITOR AT RS232 IS ON	**TO SELECT : DEPRESS [UP - Dn]**

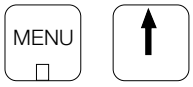


The monitor can now be switched on or off via the ↑ and ↓ keys.

Depending on the selected channel set-up mode, the following screen can be seen (example) :



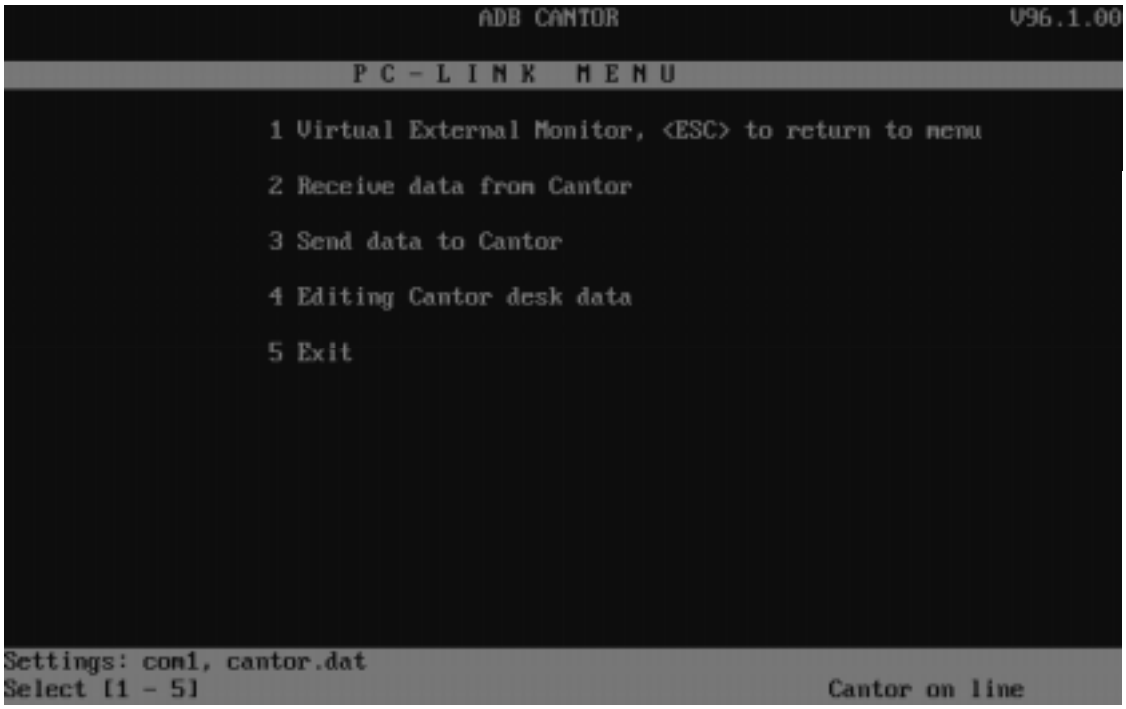
To exit the sub-menu, push the CL key twice



To reach a higher menu level, type in

The standard monitor screen

Once the Monitor is connected and switched on via the software menu, the following standard screen can be seen :


ADB CANTOR V96.1.00
P C - L I N K M E N U
1 Virtual External Monitor, <ESC> to return to menu
2 Receive data from Cantor
3 Send data to Cantor
4 Editing Cantor desk data
5 Exit
Settings: com1, cantor.dat
Select [1 - 5]
Cantor on line

- **desk channels:**
  the upper screen half shows the desk's DMX output sorted by desk channels (max. 96). Colour Changer Channels are shown with a rectangular sign to the left.

- **Effects (EFF / CHA):**
  gives information about the desk's effect section

NO	currently selected Special Effect / Chaser Number				
STP X/Y	current step X of total steps Y				
TYP X Y Z	Effect type:	X	mode	N	normal
				-	negative
				A	audio triggered
		Y	movement	>	forward
				<	backward
				< >	back and forth / pendulum
		Z	profile	CT	abrupt
				CR	stepless
				SW	sawtooth
SPD	Effect speed	N	normal		
		S	slower		
		F	faster		

- **Memory History List (MODE PLAYBACK NO WAIT DOWN UP):**
  current Playback situation showing 10 Memories in order

MAN	ON / OFF	manual Playback on or off
SEQ	ON / OFF / AUTO	sequential crossfades
SPD	N / S / F	Playback speed normal, slower or faster
S	Stage Submaster contents	
P	Preset Submaster contents	
WAIT	Wait time in seconds (only valid and shown in Auto Sequence Playbacks)	
DOWN	down time in seconds	
UP	up time in seconds	

- **Current Memory (MEMORY):**
  gives information about the currently selected Memory

NO	currently selected Memory number	
WAIT	Wait time in seconds (only shown in Auto Sequence Playbacks)	
DOWN	down time in seconds	
UP	up time in seconds	
MODE	NORM	normal record mode (Master faders relevant)
	BLIND	blind record mode (Master faders ir-relevant)

- **Masters fader (MASTER):**
  shows values of the Master faders

EM	Effect Master fader
MA	Preset Master fader A
MB	Preset Master fader B
GM	Grand Master fader
FM	Flash Master fader

- **Manipulation (MANIPUL):**
  gives information about current desk manipulation status

MONITOR	blinking: MONITOR mode active
CANCEL	blinking: CANCEL mode active
MODIFY	blinking: MODIFY mode active

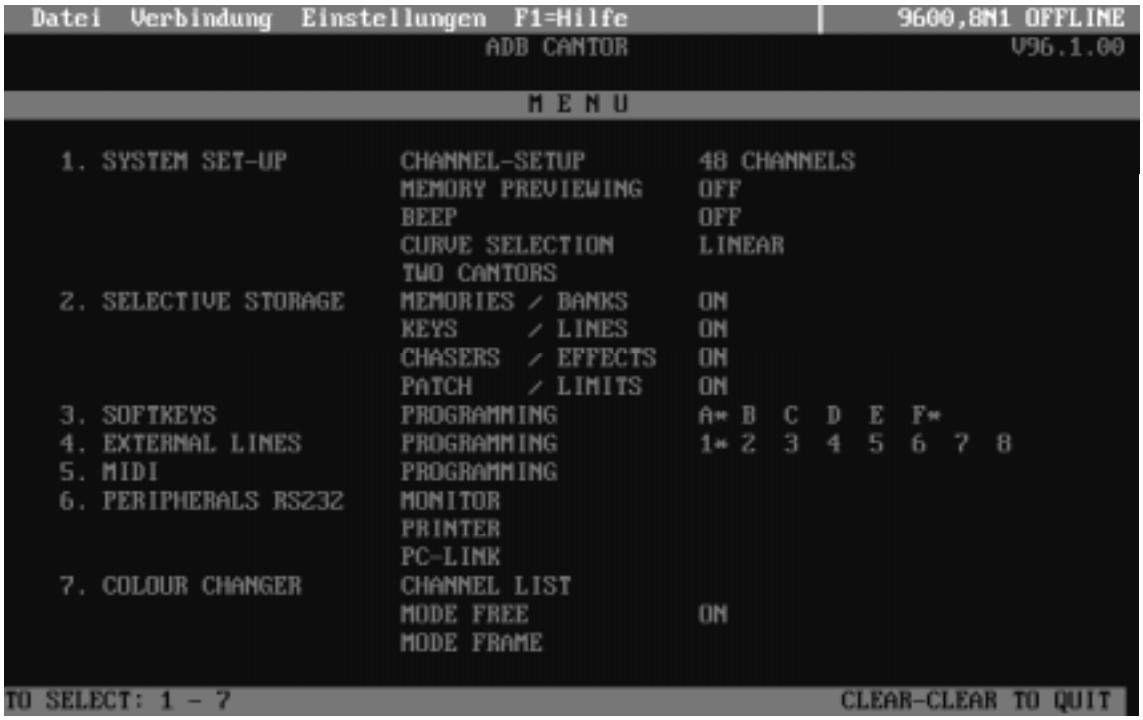
- **Messages (MESSAGE):**
  displays desk messages

- **Submasters (01-12):**
  shows the contents and fader output level of the twelve submasters

#	submaster contains channels
BK	submaster contains Bank contents
1	submaster contains Memory 1
C2	submaster contains Chaser 2
E3	submaster contains Effect 3
S	submaster is triggered by audio signal
BK4	submaster Bank 4 active
P1	fader page 1 active (channel set-up mode 3 only)
P2	fader page 2 active (channel set-up mode 3 only)
⇑	move individual channel fader up to synchronise with channel value
⇓	move individual channel fader up to synchronise with channel value

The Menu screen

pushing on the MENU button, the following screen appears :



Depending on the menu situation, a white text cursor indicates the current position in the menu tree structure.

Optional PC-Link facility

CANTOR can also be linked to a standard PC via its RS232 port. Via a special NULLMODE cable and a software for the PC, it is possible to use the following features:

- virtual colour monitor
- receiving desk data from CANTOR
- sending desk data to CANTOR
- editing CANTOR desk data

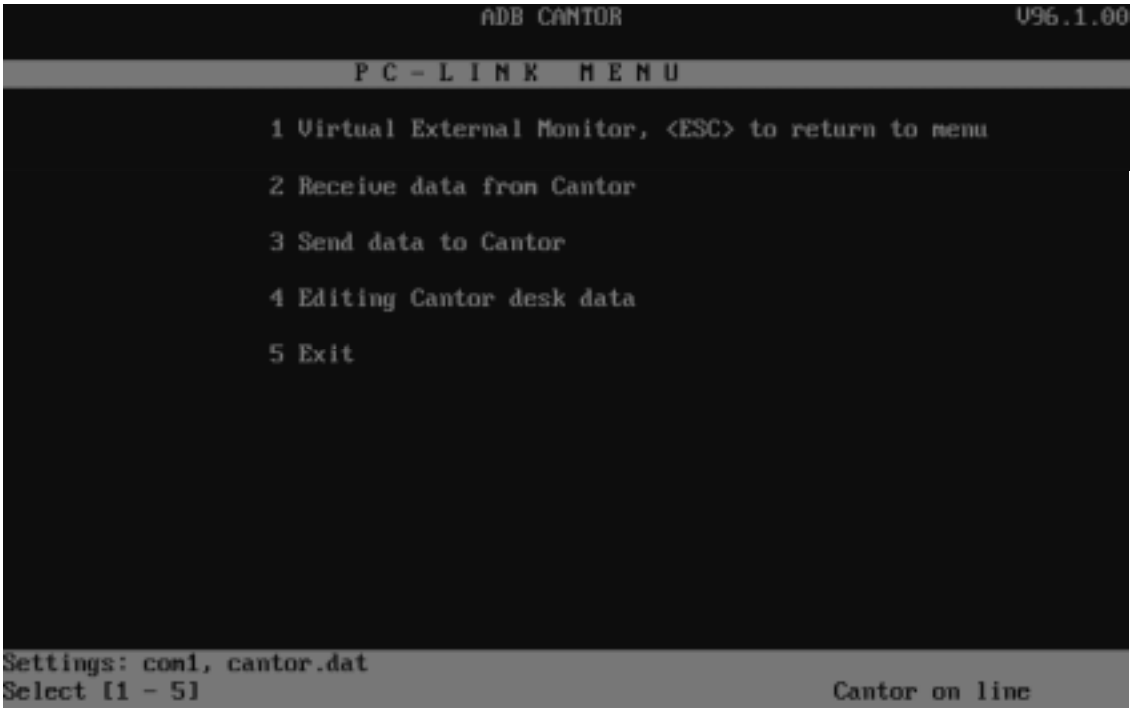
In order to install the software on your PC, create any directory on your PC storage facility and copy all the files of PC-Link floppy disk into it:

CAN_COM1.BAT	batch file to start CANT1_00.EXE with PC COM-port 1 active
CAN_COM2.BAT	batch file to start CANT1_00.EXE with PC COM-port 2 active
CANT1_00.EXE	PC-Link DOS programm
CANTOR.DAT	CANTOR desk data
Q. EXE	DOS editor

Please note, the files must be in the same file directory.

To start PC-Link, connect CANTOR to your computer via the RS232 ports, make sure that the command DEVICE = ANSI.SYS is included in the boot-file CONFIG.SYS of the computer. Now, change into the file directory with the CANTOR files and type in CAN_COM1.BAT or CAN_COM2.BAT after the DOS prompts on the PC, depending whether you like to work with COM port 1 or 2 on your computer.

The following screen will appear:


ADB CANTOR
V96.1.00
P C - L I N K M E N U
1 Virtual External Monitor, <ESC> to return to menu
2 Receive data from Cantor
3 Send data to Cantor
4 Editing Cantor desk data
5 Exit
Settings: com1, cantor.dat
Select [1 - 5]
Cantor on line

1. Virtual External Monitor

In order to have a colour screen, chose menu item 1. The PC-screen will the show the same picture as the optional monichrom monitor - but in colour. Press ESC in order to leave the Virtual Colour Screen mode.

2. Receive desk data from CANTOR

When selecting this PC menu item, CANTOR will send all internal desk data to the PC depending on the "Selective Storage" storage switches being set in CANTOR's menu 2.
Incoming data will be written in the current file directory on the PC, named CANTOR. DAT.
In order to keep existing data already written in a CANTOR.DAT file on your computer, first save this file to another disk or partition or rename the file via standard DOS means or utilities.

3. Sending data to CANTOR

In order to send the current CANTOR.DAT file to CANTOR, use the PC menu item 3. Data will be send via the RS232 line to the desk. During data transfer CANTOR's right built in display shows :

4. Editing CANTOR desk data

This menu item opens the editor Q.EXE and automatically selects the data file CANTOR.DAT.
The data file can be edited.
Please, be careful when editing desk data as it is easily possible to destroy the data file by not keeping to the internal file standard.
In order to leave the editor push on ESC and chose QUIT - QUIT ALL FILES from the following pull down menues.

5. Exit

To exit the PC software push on "5".

Optional Serial Printer

In order to select data to be printed via a serial printer, use menu item 6-2.

MENU 6 2 — To access the sub-menu, press

The displays show

1) MEMORY 3) CHASER 5) PATCH 2) BANKS 4) EFFECT	TO SELECT : DEPRESS (1 - 5)

1 ... 5 — Now, the different types of data can be selected via the decimals figures 1-5.

CLEAR CLEAR — To exit the sub-menu, push the CL key twice

MENU ↑ — To reach a higher menu level, type in

Printing Memories

The memories' contents can be printed out in three different ways:
- a Memory list
- a range of Memories
- all Memories

MENU 6 2 1 — After the access to the sub-menu via the key sequence

The displays show

1) MEMORY LIST 3) ALL MEMORIES 2) RANGE OF MEMORIES	TO SELECT : DEPRESS (1 - 3)

1 ... 5 — Now, the different types of data can be selected via the decimal figures 1-5.

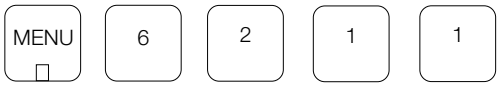
CLEAR CLEAR — To exit the sub-menu, push the CL key twice

MENU ↑ — To reach a higher menu level, type in

Printing a Memory List

A Memory list gives an overview over all existing Memories.

Type in the key sequence



and the displays show

1) MEMORY LIST 3) ALL MEMORIES **2) RANGE OF MEMORIES**	**PREPARE PRINTER :** **[IN] TO PRINT**

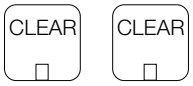
After the printer has been prepared and ready to print, push the IN key to confirm the selection. The Memory list will be printed. The print-out summarises Memory information:

- Memory number
- total number of channels
- links to other Memories
- Wait, Up and Down times

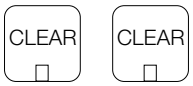
During the printing process the displays show:

1) MEMORY LIST 3) ALL MEMORIES **2) RANGE OF MEMORIES**	**PRINTING :** **[CL - CL] TO CANCEL**

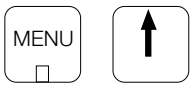
To cancel the printing process , push the CL key twice



After the print-out has been finished the sub-menu can be left via

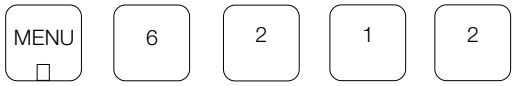


To reach a higher menu level, type in



Printing a Range of Memories

Memories can be printed separately while displaying more details.

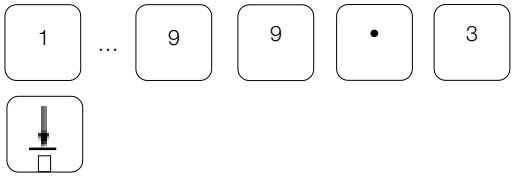


To enter the sub-menu, type in the key sequence

and the displays show

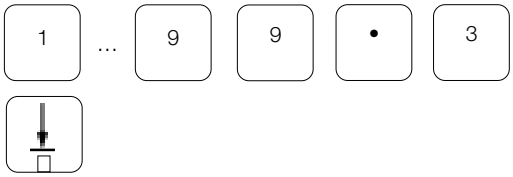
1) MEMORY LIST 3) ALL MEMORIES 2) RANGE OF MEMORIES	TYPE FIRST MEM. NUMBER [IN]

Select the first Memory number to be printed via the decimal keyboard and confirm with the IN key.



1) MEMORY LIST 3) ALL MEMORIES 2) RANGE OF MEMORIES	TYPE LAST MEM. NUMBER [IN]

Select the last Memory number to be printed via the decimal keyboard and confirm with the IN key.



1) MEMORY LIST 3) ALL MEMORIES 2) RANGE OF MEMORIES	PREPARE TO PRINT [IN]TO PRINT

After the selection of the last Memory, a display reminds you to prepare the printer and to push on the IN key again.

Now all the Memories in the range between the first and the last given Memory number will be printed, showing the values of each channel.

During the printing process the displays show:

1) MEMORY LIST 3) ALL MEMORIES 2) RANGE OF MEMORIES	PRINTING… [CL - CL] TO CANCEL

CLEAR CLEAR To cancel the printing process , push the CL key twice

CLEAR CLEAR After the print-out has been finished the sub-menu can be left via

MENU ↑ To reach a higher menu level, type in

Printing all Memories

This menu item offers the possibility to print the contents of all existing Memories.

MENU 6 2 1 3 To enter the sub-menu, type in the key sequence

and the displays show

1) MEMORY LIST 3) ALL MEMORIES 2) RANGE OF MEMORIES	PREPARE PRINTER [IN] TO PRINT

A display reminds you to prepare the printer and to push on the IN key again.

Now all existing Memories will be printed, showing the values of each channel.
During the printing process the displays show:

1) MEMORY LIST 3) ALL MEMORIES 2) RANGE OF MEMORIES	PRINTING… [CL -CL] TO CANCEL

CLEAR CLEAR To cancel the printing process , push the CL key twice

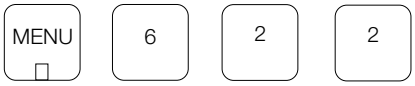
CLEAR CLEAR After the print-out has been finished the sub-menu can be left via

MENU ↑ To reach a higher menu level, type in

Printing the contents of Submaster Banks

This menu item offers the possibility to print the contents of all existing Submaster Banks.

To enter the sub-menu, type in the key sequence



and the displays show

1) MEMORY 3) CHASER 5) PATCH **2) BANKS 4) EFFECT**	**PREPARE PRINTER** **[IN] TO PRINT**

A display reminds you to prepare the printer and to push on the IN key again.

The contents of all Submaster Banks will be printed.
Example:

Bank List

Bank	Submaster / Contents					
1	1/.....	2/chann.	3/chs.01	4/eff.02	5/chann.	6/chann.
	7/chann.	8/.....	9/ 1	10/.....	11/chann.	12/eff.09
2	1/.....	2/chann.	3/chs.01	4/eff.02	5/chann.	6/chann.
	7/chann.	8/.....	9/ 1	10/.....	11/chann.	12/eff.09

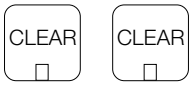
The used abbreviations and symbols:

...	empty Submaster
chs.01	Chaser No. 1
eff.02	Special Effect No. 2
3	Memory No. 3
chann	individual channels

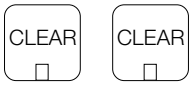
During the printing process the displays show:

1) MEMORY 3) CHASER 5) PATCH **2) BANKS 4) EFFECT**	**PRINTING** **[CL - CL] TO CANCEL**

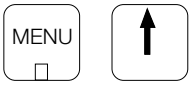
To cancel the printing process , push the CL key twice



After the print-out has been finished the sub-menu can be left via



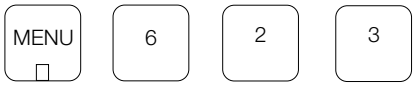
To reach a higher menu level, type in



ADB Lighting Technologies

Printing Chasers

This menu item offers the possibility to print the contents of all existing Chasers.



To enter the sub-menu, type in the key sequence

and the displays show

1) MEMORY 3) CHASER 5) PATCH **2) BANKS 4) EFFECT**	**PREPARE PRINTER** **[IN] TO PRINT**

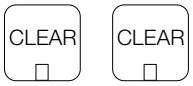
A display reminds you to prepare the printer and to push on the IN key again.

The contents of all existing Chasers will be printed.
Example:

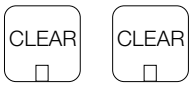
```
Chasers
        Chaser 1  — NORMAL BACKWARDS ABRUPT
        Time per step: 40
        Step 1 :
                 1:FF   2:89    4:23    5:11   17:FF  18:FF  19:12  20:FF  45:17  46:13
                47:FF  48:89   49:23   51:10   52:FF  53:FF  55:13  70:FF  71:17  72:14
        Step 2 :
                 1:FF   2:89    4:23    5:11   17:FF  18:FF  19:12  20:FF  45:17  46:13
                47:FF  48:89   49:23   51:10   52:FF  53:FF  55:13  70:FF  71:17  72:14
```

During the printing process the displays show:

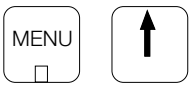
1) MEMORY 3) CHASER 5) PATCH **2) BANKS 4) EFFECT**	**PRINTING** **[CL - CL] TO CANCEL**



To cancel the printing process , push the CL key twice



After the print-out has been finished the sub-menu can be left via

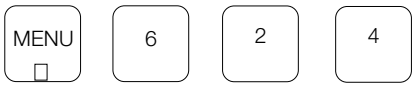


To reach a higher menu level, type in

Printing Special Effects

This menu item offers the possibility to print the contents of all existing Special Effects.

To enter the sub-menu, type in the key sequence



and the displays show

1) MEMORY 3) CHASER 5) PATCH **2) BANKS 4) EFFECT**	**PREPARE PRINTER** **[IN] TO PRINT**

A display reminds you to prepare the printer and to push on the IN key again.

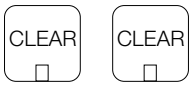
The contents of all existing Special Effects will be printed.
Example:

```
Spcial Effects

    Effect 1  - “GROUP CHASE SINGLE PROGRESSIVE” - NORMAL FORWARDS ABRUPT
    Time per Step:      34
    Channels:           1  96  34  56  77  87  12  13  14   2   3   4  11  15  16  17  18
                        19 20  21  22  23  24  25  26  27  28  29  30  31  32  33  35  36
                        37

    Effect 2  - «GROUP CHASE DOUBLE BOUNCE» - NORMAL FORWARDS ABRUPT
    Time per Step:      11
    Channels:           93 94  34  56  77  87  12  13  14   2   3   4  11  15  16  17  92
                        19 20  21  22  23  24  25  26  27  28  29  30  31  32  33  35  91
                        47
```

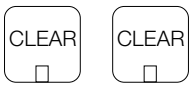
During the printing process the displays show:

1) MEMORY 3) CHASER 5) PATCH **2) BANKS 4) EFFECT**	**PRINTING** **[CL - CL] TO CANCEL**

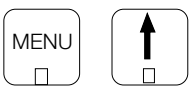
To cancel the printing process , push the CL key twice



After the print-out has been finished the sub-menu can be left via



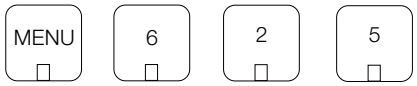
To reach a higher menu level, type in



Printing the Patch

It is possible to select between two different kinds of presentation:
- patch sorted by dimmers
- patch sorted by desk channels

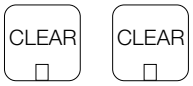
Moreover, the sub-menu offers the possibility to print out all unused dimmers, i.e., all dimmers that are not connected to desk channels via the Patch.



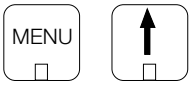
To enter the sub-menu, type in the key sequence

and the displays show

1) SORT BY DIMMERS 2) SORT BY CHANNELS	3) UNUSED DIMMERS
TO SELECT DEPRESS [1 - 3]	



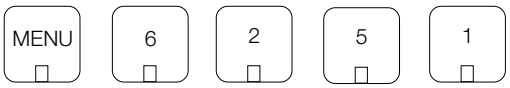
The sub-menu can be left via



To reach a higher menu level, type in

Printing the Patch sorted by Dimmers

The Patch can be printed out sorted in logical order of the dimmers addresses 1-512.



To enter the sub-menu, type in the key sequence

and the displays show

1) SORT BY DIMMERS 2) SORT BY CHANNELS	3) UNUSED DIMMERS
PREPARE PRINTER [IN]TO PRINT	

A display reminds you to prepare the printer and to push on the IN key .

The Patch is now printed.
Example:

Soft Patch

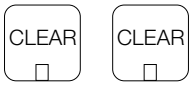
sorted by Dimmers

Dim	Ch	Dim	Ch	Dim	Ch	Dim	Ch	Dim	Ch	Dim	Ch	Dim	Ch	Dim	Ch	Dim	Ch	Dim	Ch
1	1	53	53	105	96	157	96	209	96	261	96	313	96	365	96	417	96	469	96
2	2	54	54	106	96	158	96	210	96	262	96	314	92	366	91	418	96	470	96
3	3	55	55	107	96	159	1	211	1	263	9	315	4	367	4	419	7	471	1
4	4	56	56	108	96	160	1	212	1	264	9	316	4	368	4	420	7	472	1
5	5	57	57	109	96	161	1	213	1	265	9	317	4	369	4	421	7	473	1

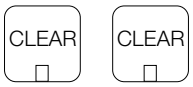
During the printing process the displays show:

1) SORT BY DIMMERS 3) UNUSED DIMMERS **2) SORT BY CHANNELS**	**PRINTING…** **[CL - CL] TO CANCEL**

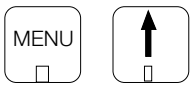
To cancel the printing process , push the CL key twice



After the print-out has been finished the sub-menu can be left via

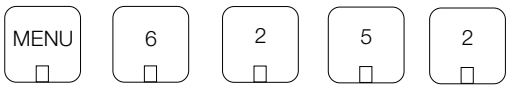


To reach a higher menu level, type in



Printing the Patch sorted by Desk Channels

The Patch can be printed out sorted in logical order of the desk channels 1-96.



To enter the sub-menu, type in the key sequence

and the displays show

1) SORT BY DIMMERS 2) SORT BY CHANNELS 3) UNUSED DIMMERS	PREPARE PRINTER [IN] TO PRINT

A display reminds you to prepare the printer and to push on the IN key .

The Patch is now printed.
Example:

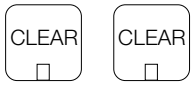
Soft Patch

sorted by Channels

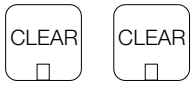
Ch	Dim	Ch	Dim	Ch	Dim	Ch	Dim
1	1	53	53	53	109	90	
2	2	54	54		110	91	
3	3	55	55		111	92	
4	4	56	56		112	93	
5	5	57	57		113	94	
6	6	58	58		114	95	
7	7	59	59		115	96	125
8	8	60	60	54	95		
9	9	61	61		116		
10	10	62	62		117		

During the printing process the displays show:

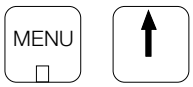
1) SORT BY DIMMERS 2) SORT BY CHANNELS 3) UNUSED DIMMERS	PRINTING… [CL - CL] TO CANCEL



To cancel the printing process , push the CL key twice



After the print-out has been finished the sub-menu can be left via

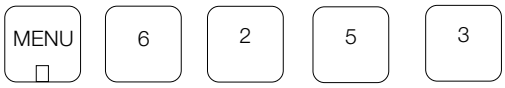


To reach a higher menu level, type in

Printing unused Dimmers

This sub-menu offers the possibility to print all the unused dimmers, i.e., all the dimmers that are not connected to desk channels via the Patch.

To enter the sub-menu, type in the key sequence



and the displays show

1) SORT BY DIMMERS 3) UNUSED DIMMERS **2) SORT BY CHANNELS**	**PREPARE PRINTER** **[IN] TO PRINT**

A display reminds you to prepare the printer and to push on the IN key .

A list of the unused dimmers is now printed.
Example:

Soft Patch

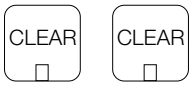
Unused Dimmers

Dim	Dim
401	453
402	454
403	
404	
405	
406	
407	
408	
409	

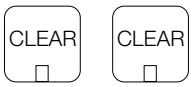
During the printing process the displays show:

1) SORT BY DIMMERS 3) UNUSED DIMMERS **2) SORT BY CHANNELS**	**PRINTING…** **[CL - CL] TO CANCEL**

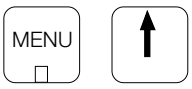
To cancel the printing process , push the CL key twice



After the print-out has been finished the sub-menu can be left via



To reach a higher menu level, type in



Colour Changers

CANTOR offers the possibility to treat Colour Changer devices seperately. In this case, the selected desk channels bypass the Preset Master faders and the Grand Master.

When a Submaster containing Colour Changer channels is driven out on the DMX port, these channels will immediately jump to there assigned maximum values, not following the movement of the Submaster fader. The same is valid for the Playback Submasters. The aim is to change the colours while the intensity of the corresponding luminary is still very low.

In general, there are two different Colour Changer modes:
- mode ‘free’
- mode ‘frame’

In mode ‘free’ there is no difference compared to intensity channels concerning the DMX values on the output. The values are driven from 0 to 255. Thus, it can happen with certain fader positions, that a Scroller stops the colour gel at a position between two colours.
This can be prevented in mode frame ‘frame’ where the number of colours available on a Scroller can be assigned to a Colour Changer channel.
After a cold start the default is mode ‘free’.

MENU 7 — To access the sub-menu, press

The displays show

1) CHANNEL LIST **2) MODE FREE ***	**3) MODE FRAME**

TO SELECT **DEPRESS [1 - 3**

0 ... 3 — Now, the Colour Changer channels and the mode can be selected via the decimals figures 1-3.

CLEAR CLEAR — To exit the sub-menu, push the CL key twice

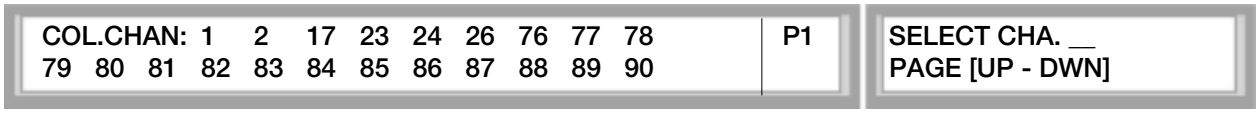
MENU ↑ — To reach a higher menu level, type in

Selecting Colour Changer channels

Any desk channel can be selected as Colour Changer channel. The sub-menu 7-1 therefore offers the possibility to determine these channels.

To access the sub-menu, press

The displays show (example)

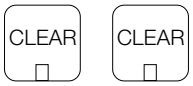


The first 21 Colour Changer channels are displayed (if there have already been channels selected before).

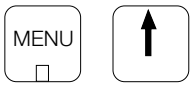
To scroll through the list, use the Up and Down keys

To select or deselct a channel use the individual channel Flash buttons

To exit the sub-menu, push the CL key twice



To reach a higher menu level, type in



Selecting Colour Changer Mode ‘Free’

In this mode there is no difference compared to intensity channels concerning the DMX values on the output. The values are driven from 0 to 255. Thus, it can happen with certain fader positions, that a Scroller stops the colour gel at a position between two colours.

To access the sub-menu, press

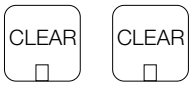
The displays show for 3 seconds

1) CHANNEL LIST 3) MODE FRAME 2) MODE FREE *	MODE FREE SELECTED

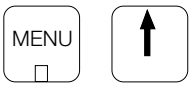
and then

1) CHANNEL LIST 3) MODE FRAME 2) MODE FREE *	TO SELECT DEPRESS [1 - 3]

From now on, a star symbol after the corresponding menu item in the display indicates that mode ‘free’ is selceted



To exit the sub-menu, push the CL key twice



To reach a higher menu level, type in

Selecting Colour Changer Mode ‘Frame’

In this mode the total number of colours available on Colour Changers can be assigned to the devices. The figure selected is valid for all ADB Colour Changers connected to CANTOR.
Maximum 21 colour available.

So, if you select 11 colours to be available, will provoke 11 values to be driven on the DMX OUT port when moving the corresponding channel fader from 0 to 100%.

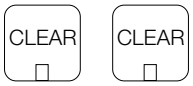
To access the sub-menu, press

The displays show

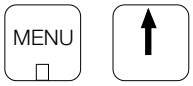
TOTAL NUMBER OF COLOURS : 11	**SELECT NUMBER [2 - 21]**

The total number of colours available can now be typed in via the decimal keyboard

To exit the sub-menu, push the CL key twice



To reach a higher menu level, type in



Midi

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List of Codes	108
Some concrete examples of applications	119

MIDI - Introduction

MIDI is an abreveation for «Musical Instrument Digital Interface». MIDI appeared in the musical world in the 1980"s, and now has also been introduced into the world of lighting. Many people talk about it, and MIDI has become a «must» for any new lighting desk. But in fact, few people really know what it can be used for.
The aim of this chapter is to clarify a few points, which may still be a bit foggy, and to show you the possibilities offered by CANTOR thanks to this interface.

What is MIDI good for ?

MIDI was created originally to serve as an interface between different musical instruments. The aim is to permit the instruments to exchange information, according to a standardized protocol. Thus, it is possible to connect, for example, a brand X synthesizer with a brand Y rhythm box.
Over the years, other devices have appeared, on the market such as sequencers (which permit the recording of MIDI information and its restitution on command), and «home computers» opening the door to more elaborate processing.

In lighting, this possibility of exchanging information between different devices is evidently the point which interests us.

Why MIDI?

The great advantage of MIDI is that it is readily available, that it has acquired many users, and above all, because it is simple to implement.

32 kbit / sec.

The frequency of transmission of MIDI signals is 32Kbits/sec. That is rapid in comparison with a standard RS 232 connection (9.6 Kbits/sec.) and, at the same time, slow in comparison with a DMX transmission (250 Kbits/sec.). In fact, MIDI is perfectly convenient for sending a series of brief orders in real time (such as, for example, twenty notes per second) but is not at all suitable for sending a continuous set of data (the DMX 512 permits sending 512 different values up to 40 times per second).

In lighting, therefore, you could easily send a message such as «load and start Memory 1» or «flash the Submaster 2» via a MIDI line, but you could not control fifty motorized projectors in real time!

15 m.

The connection cables for a MIDI line are limited to 15 m. Nevertheless, if longer distances are necessary, ADB can provide amplification boxes which transmit a MIDI signal up to 1000 m.

Some technical terms

Before going further, here the definition of some technical terms :

BIT	Unit of binary measurement which may take values 0 or 1
BYTE	A succession of 8 bits. A byte can have a value between 0 and 255 (decimal).
MIDI MESSAGE	A midi message is formed by a succession of bytes. The first byte generally gives the nature of the message, as well as the MIDI channel.
MIDI CHANNEL	Supplementary code (varying from 0 to 15) characterizing a MIDI message (the information is generally presented in the first byte of a MIDI message). This code permits several peripherals connected on the same MIDI line to select the messages which are addressed to it. For example, they may reject all the messages which do not begin with the information «Channel 5». The notion of channel is therefore purely one of software.
CANTOR AND MIDI	Like most MIDI peripherals, CANTOR has 3 DIN 5 connectors:

- MIDI IN : permits reception of a MIDI signal transmitted by another device
- MIDI THRU : re-amplifies the MIDI IN signal, which permits linking several devices.
- MIDI OUT : permits transmission of a MIDI signal

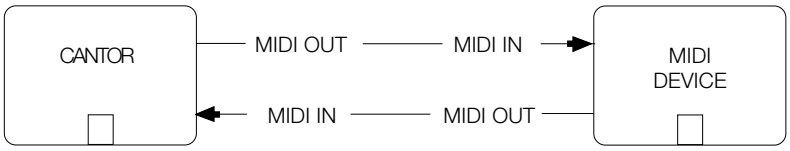
We will now review the MIDI possibilities of the CANTOR, by successively analyzing:
- the MIDI codes recognized by CANTOR
- the utilization of these codes by CANTOR
- some concrete examples of applications.

Interconnection

CANTOR can receive and send MIDI events.

MIDI events are
- MIDI Notes (Note on / Note off)
- Program Changes
- Control Changes

In order to send and receive MIDI information, make sure that CANTOR is well connected to the corresponding MIDI peripherals. Therefore, connect the MIDI IN port of CANTOR to the MIDI OUT port of the MIDI device, and the CANTOR's MIDI OUT port to the device's MIDI IN port.



MENU 5

To verify the interconnection, select the MIDI menu via the key sequence

If CANTOR is well connected to the MIDI device, the displays show:

1) MIDI IN **2) MIDI OUT**	**3) SET-UP**	**M**	**TO SELECT** **DEPRESS (1 - 3)**

A symbol 'M' in the upper right display corner indicates an incoming MIDI signal.

If your MIDI device does not send MIDI information permanently, you first have to provoke the transmission of any MIDI event on the external MIDI device, e.g., playing some notes on a synthesiser ore playing a pre-recorded song on a MIDI sequencer. If the incoming MIDI signal stops, the 'M' symbol will disappear after 5 seconds.

CLEAR CLEAR

To exit the sub-menu, push the CL key twice

MENU ↑

To reach a higher menu level, type in

List of Codes

CANTOR recognizes and produces the following MIDI codes

"NOTE ON" (I00Innnn + 1 ou 2 data bytes)

The «NOTE ON» code involves a code sent by the synthesizer every time a note is played.

- the first byte gives the code and the MIDI channel («nnnn»)
- the second byte gives the value of the note (128 possibilities)
- the third byte gives the velocity of the note.

"NOTE OFF" (I000nnnn + 1 ou 2 data bytes)

The «NOTE OFF» code is the complement of the preceding. It is transmitted every time a note is released.

- the first byte gives the code and the MIDI channel («nnnn»)
- the second byte gives the value of the note (128 possibilities)
- the third byte gives the speed of release of the note.

"ALL NOTES OFF" (I0IInnnn + 0IIII0II + 00000000)

The ALL NOTES OFF code means that all the notes are released. It is generally emitted when the synthesizer is turned on.

- the first byte gives the code and the MIDI channel («nnnn»)
- the second byte gives the number of the programme (128 possibilities)

"PROGRAM CHANGE" (II00 nnnn + 1 data byte)

This message permits you, from a master control-board, to modify preselections on all machines according to the same MIDI channel.

- the first byte gives the code and the MIDI channel (nnnn)
- the second byte gives the programm number (128 possibilities)

"CONTROL CHANGE" (I0II nnnn + 2 data bytes)

This message permits to modify certain adjustments from a distance. In contrast to other messages, which interpret exact actions (sending a note, selecting a programme), this one permits to send continual regulation values (faders, pedals, thumbwheels, etc.)

- the first byte gives the code and the MIDI channel (nnnn)
- the second byte gives the number of the regulation code (128 possibilities)
- the third byte gives the absolute value of this regulation

"MIDI CLOCK" (IIIII000)

This message is utilized as a temporal reference by the rhythm boxes and MIDI sequences.
It permits the machines to function in perfect synchronization.

The MIDI Set-up

This sub-menu offers the possibility to configure CANTOR for MIDI connections.

The following parameters are available:

-	Audio Step	0-9
-	Note Level	No / YES
-	MIDI Program Change channel	0-16
-	MIDI Control Change channel	0-16
-	MIDI Note channel	0-16

The Audio Step functions determines whether CANTOR reacts on an incoming audio signal (Audio Step = OFF) or on a MIDI clock signal. The figures 1-9 select how many MIDI clock events are necessary to make an Effect step progressing to the next step. In both cases, the Chaser / Special Effect type potentiometer must be switched to AUDIO STEP (see section 'Effects').

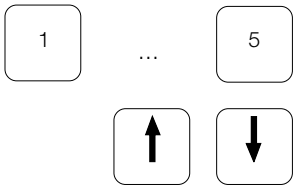
Note Level permits CANTOR to react on velocity values of Note commands. The harder a keyboard note is hit, the higher the corresponding DMX value is.

Note, Program Change and Control Change channels select the corresponding MIDI channel. If 0 is selected the channel is switched off.

To access the MIDI set-up sub-menu, press

The displays show

1) AUDIO STEP : O 3) PROGR. CH. : 1 5) NOTES **2) NOTE LEVEL : NO 4) CONTR. CH. : 1 1**	**DEPRESS (1 - 5)** **CHANGE (Up - Dn)**



In order to change the parameters select the corresponding sub-menu item number via the decimal keyboard, and change the value via the ↑ and ↓ keys.

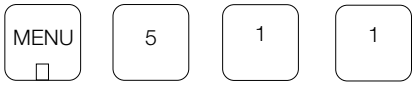
MIDI IN

When CANTOR receives MIDI events, it can react to Notes, Program Changes and Control Changes. Whenever a MIDI event comes in, CANTOR can perform Macro sequences containing up to 18 commands.

Programming MIDI IN Note events

128 MIDI Note events can be programmed

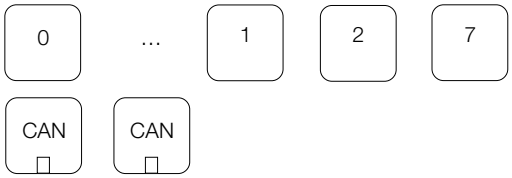
To access the sub-menu, press



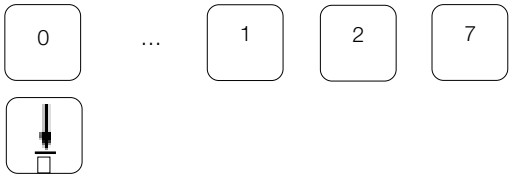
The displays show

NOTE *** TO PROGRAM : DEPRESS (IN) TO ERASE : DEPRESS 2 * (CAN)	SELECT NOTE, THEN PROGRAM OR ERASE

In order to erase a MIDI Note push on the CANcel key twice after you have selected the Note via the decimal keyboard.



In order to program a MIDI Note, select a Note number via the decimal keyboard and confirm with the IN key.



The displays now show

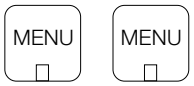
NOTE : X : DEPRESS 2 * (Menu)	P1	TO RECORD :

or, if the programming of the Note event is already programmed (example)

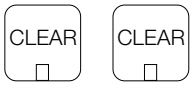
NOTE : X : IN 1 2 3 4 P48 P46 P46 P46 P37	P2	TO RECORD : DEPRESS 2 * (Menu)

In order to program the Note event now, press the keys you want to add to the Macro sequence in the order the desk manipulations should be performed afterwards.

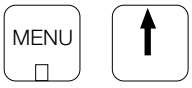
To confirm the programming of a key sequence , press the MENU key twice



To exit the Note event sub-menu afterwards, push the CL key twice



To reach a higher menu level, type in



Note:
you first have to exit the programming procedure via MENU, MENU in order to use MENU↑ or CL CL to quit the sub-menu.

Programming MIDI IN Program Change events

MENU 5 1 2

128 MIDI Program Changes can be programmed. To access the sub-menu, press

The displays show

P. CH : **TO PROGRAM : DEPRESS (In)** **TO ERASE : DEPRESS 2 * (CAN)**	**SELECT P. CH, THEN PROGRAM OR ERASE**

0 ... 1 2 7

CAN CAN

In order to erase a Program Change programming, push on the CANcel key twice after you have selected the Program Change number via the decimal keyboard.

0 ... 1 2 7

IN

In order to program a Program Change event, select a Program Change number via the decimal keyboard and confirm with the IN key.

The displays now show

P.CH : X : **P1**	**TO RECORD :** **DEPRESS 2 * (Menu)**

or, if the programming of the Note event is already programmed (example)

P. CH : X : IN 1 2 3 4 P48 P46 P46 P2 **P46 P37**	**TO RECORD :** **DEPRESS 2 * (Menu)**

In order to program the Program Change event now, press the keys you want to add to the Macro sequence in the order the desk manipulations should be performed afterwards.

MENU MENU

To confirm the programming of a key sequence , press the MENU key twice

CLEAR CLEAR

To exit the Program Change event sub-menu, push the CL key twice

MENU ↑

To reach a higher menu level, type in

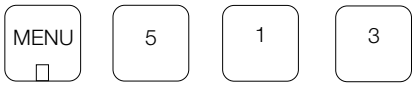
Note:
you first have to exit the programming procedure via MENU, MENU in order to use MENU ↑ or CL CL to quit the sub-menu.

Programming MIDI IN Control Change events

MIDI IN Control Change events are always related to CANTOR's faders.

Four different fader types can be programmed:
- Grand Master fader
- Flash Master fader
- 12 Submaster faders
- a virtual fader representing a synchronous movement of the Playback's Submaster faders 'Stage' and 'Preset'

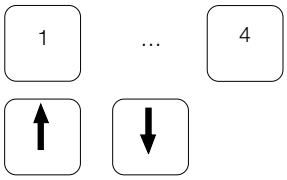
To access the sub-menu, press



The displays show

1) SUBMASTERS:FROM : 32 3) CROSS-FADE : 45 **2) FLASH MASTER : 44 4) GND MASTER : 46**	**DEPRESS : (1 - 4)** **CHANGE : (Up - Dn)**

In order to assign incoming Control Change events to desk faders, select the fader menu item number via the decimal keyboard and modify the Control Change command via the ↑ and ↓ keys.

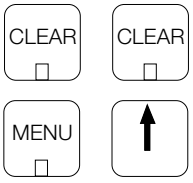


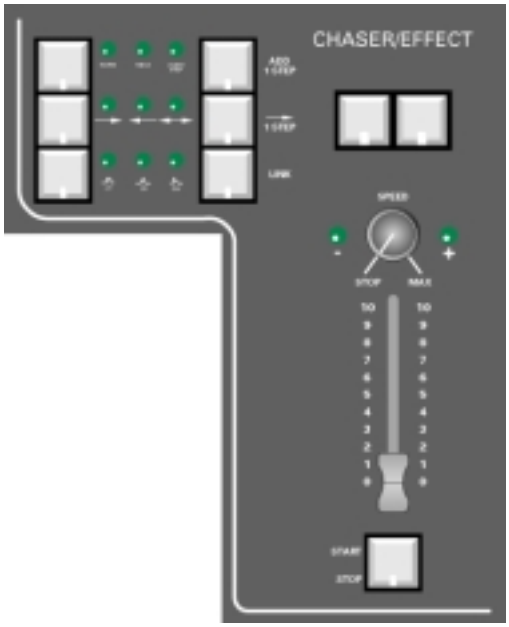
Note:
when the 12 Submaster faders shall be assigned to a Control Change command, only the first Control Change command address of Submaster 1 is required. The other 11 Submasters follow successively.

Example:
Submaster 1 = Control Change 1
-> Submasters 2 - 12 = Control Change 2 - 12

To exit the Control Change event sub-menu, push the CL key twice

To reach a higher menu level, type in





Triggering a Chaser or Special Effect via a MIDI IN signal

Select the Effect (Chaser / Special Effect) in the effect section and chose the Audio Start mode. Start the Effect via the Effect START button.

MENU 5 3

Enter the MIDI Set-up via the key sequence

The displays show

1) AUDIO STEP : OFF 3) PROGR. CH. : 1 5) NOTES **2) NOTE LEVEL : NO 4) CONTR. CH. : 1 1**	**DEPRESS (1 - 5)** **CHANGE (Up - Dn)**

1 ↑ ↓

In order to change the Audio Step parameters, select sub-menu item number 1 on the decimal keyboard and chose a number between 1 and 9 via the ↑ and ↓ keys.

CLEAR CLEAR

Leave the menu, pushing the CL key twice

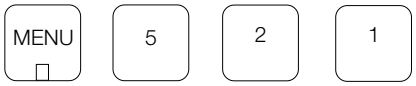
The Effect is no triggered by the MIDI clock. Depending on the figure 1-9 you assigned to the Audio Step, the individual Effect steps progress

Example:
Audio Step 2 = 2 MIDI clock commands are necessary to let the Effect progress 1 step.

Programming MIDI OUT Note events

128 different MIDI Note commands can be assigned to the following desk buttons:
- the individual 96 channel flash buttons
- the Effect START button
- the Playback START button
- the Softkeys A-F

To access the sub-menu, press

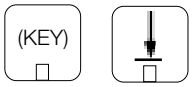


The displays show

KEY : TO PROGRAM : DEPRESS (In) **TO ERASE : DEPRESS 2 * (CAN)**	**PRESS A KEY,** **PROGRAM OR ERASE**

In order to erase a programming of a Note event, push on the CANcel key twice after you have selected any of the above mentioned desk buttons.

In order to program a Note event, select any of the above mentioned desk buttons and confirm with the IN key.



The displays now show

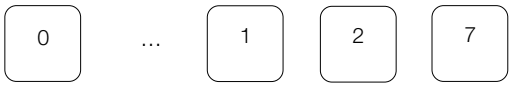
KEY : X :	**P1**	**TO RECORD :** **DEPRESS 2 * (Menu)**

or, if the key is already programmed (example)

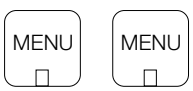
KEY : X : 123	**P2**	**TO RECORD :** **DEPRESS 2 * (Menu)**

Any key can only be assigned to one single Note command. The value must be in the range between 0 and 127.

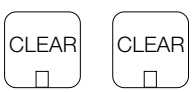
The Note command can now be assigned via the decimal keyboard.



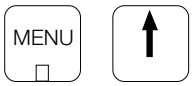
To confirm the programming press the MENU key twice



To exit the sub-menu, push the CL key twice



To reach a higher menu level, type in



ADB Lighting Technologies

Programming MIDI OUT Program Change events

128 different MIDI Program Change commands can be assigned to the following desk buttons:
- the individual 96 channel flash buttons
- the Effect START button
- the Playback START button
- the Softkeys A-F

MENU 5 2 2

To access the sub-menu, press

The displays show

KEY : **TO PROGRAM : DEPRESS (In)** **TO ERASE : DEPRESS 2 * (CAN)**	**PRESS A KEY,** **PROGRAM OR ERASE**

(KEY) CAN CAN

In order to erase a programming of a Program Change event, push on the CANcel key twice after you have selected any of the above mentioned desk buttons.

(KEY)

In order to program a Program Change event, select any of the above mentioned desk buttons and confirm with the IN key.

The display now show

KEY : X :	**P1**	**TO RECORD :** **DEPRESS 2 * (Menu)**

or, if the key is already programmed (example)

KEY : X : 123	**P2**	**TO RECORD :** **DEPRESS 2 * (Menu)**

Any key can only be assigned to one single Program Change command. The value must be in the range between 0 and 127.

0 ... 1 2 7

The Program Change command can now be assigned via the decimal keyboard.

MENU MENU

To confirm the programming press the MENU key twice

CLEAR CLEAR

To exit the sub-menu, push the CL key twice

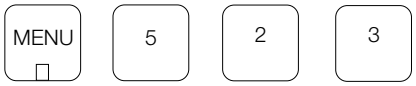
MENU

To reach a higher menu level, type in

Programming a ALL NOTES OFF command

The MIDI standard ALL NOTES OFF command can be assigned to CANTOR's buttons:
- the individual 96 channel flash buttons
- the Effect START button
- the Playback START button
- the Softkeys A-F

To access the sub-menu, press

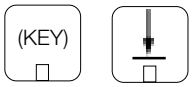


The displays show

KEY : **TO PROGRAM : DEPRESS (In)** **TO ERASE : DEPRESS 2 * (CAN)**	**PRESS A KEY,** **PROGRAM OR ERASE**

In order to erase a programming of a ALL NOTES OFF event, push on the CANcel key twice after you have selected any of the above mentioned desk buttons.

In order to program an ALL NOTES OFF event, select any of the above mentioned desk buttons and confirm with the IN key.

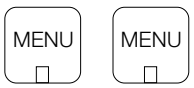


The display now show

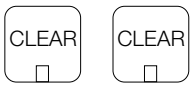
KEY : X : 0	**P1**	**TO RECORD :** **DEPRESS 2 * (Menu)**

Here, no value has to be assigned as the MIDI standard ALL NOTES OFF command is a defined command.

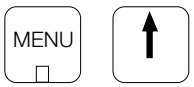
To confirm the programming, just press the MENU key twice



To exit the sub-menu, push the CL key twice



To reach a higher menu level, type in



Programming MIDI OUT Control Change events

128 different Control Change commands can be assigned to the following desk faders:

- the individual 96 channel faders
- the Preset Master fader A
- the Preset Master fader B
- the Grand Master fader
- the Flash master fader
- the Effect Level fader
- the Submaster faders 1-12
- the Playback's Stage Submaster fader
- the Playback's Preset Submaster fader

MENU 5 2 4

To access the sub-menu, press

The displays show

FAD : **TO PROGRAM : DEPRESS (IN)** **TO ERASE : DEPRESS 2 * (CAN)**	**MOVE A FADER,** **PROGRAM OR ERASE**

(FADER) CAN CAN

In order to erase a programming of a Control Change event, push on the CANcel key twice after you have selected any of the above mentioned desk faders by moving it up or down.

(FADER) IN

In order to program a Control Change event, select any of the above mentioned desk faders by moving it up or down and confirm the selection with the IN key.

The display now show

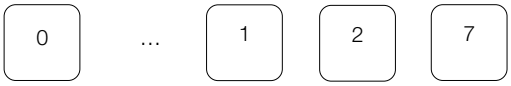
FAD : X : 0	**P1**	**TO RECORD :** **DEPRESS 2 * (Menu)**

or, if the key is already programmed (example)

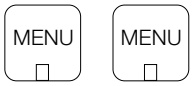
FAD : X : 123	**P1**	**TO RECORD :** **DEPRESS 2 * (Menu)**

Any of the above mentioned faders can only be assigned to one single Control Change command. The value must be in the range between 0 and 127.

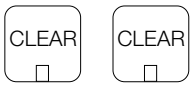
The Control Change command can now be assigned via the decimal keyboard.



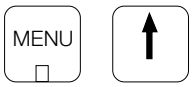
To confirm the programming press the MENU key twice



To exit the sub-menu, push the CL key twice



To reach a higher menu level, type in



SOME CONCRETE EXAMPLES OF APPLICATIONS

The simplest way to proceed for a CANTOR to be remote controlled via MIDI :

- select the same MIDI channel on the CANTOR and the synthesizer/sequencer
- programme some «NOTE ON»s on the CANTOR (the 48 channel flashes, for example)

The result, in this case, will be a luminous effect which «follows» the music.

But we realize that we are very quickly limited by this configuration. If the operator uses a more or less complete synthesizer (that is capable of sending «PROGRAMME CHANGES» and including some thumbwheels or regulation faders transmitting the «CONTROL CHANGES»), he can also control the lighting independently of the music.

To do this, just:

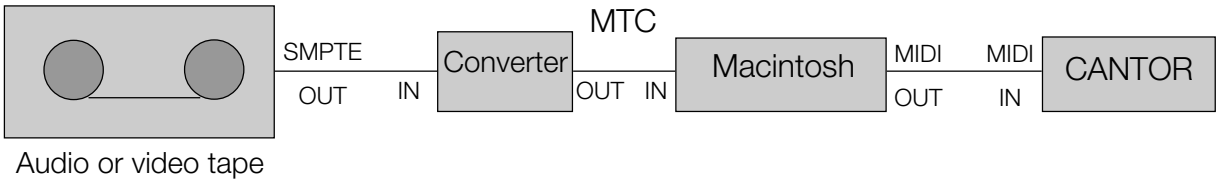
- select the same channels on the synthesizer and on the CANTOR for the «PROGRAMME CHANGES» and the «CONTROL CHANGES» (which may be different from the channel used for the notes, in order not to interfere with possible other peripherals).

- change the lighting state on the screen, start or stop a chaser starting from a synthesizer, by selecting a new programme

- control, starting from an unused fader, the global intensity of the desk, the intensity of a submaster, or cause the playback submaster to go forward.

To realize more elaborate effects, such as starting an effect on a chord or a succession of notes, it is necessary to intercalate some LOGIC between the synthesizer and the CANTOR: this is the purpose of this configuration.

In the above mentioned applications, the synthesizer can be replaced by any other peripheral capable of sending MIDI codes: drum MIDI, guitar MIDI, rhythm box, etc.



The aim of this configuration is to create an entirely automatic light and sound show.

Definition of terms:

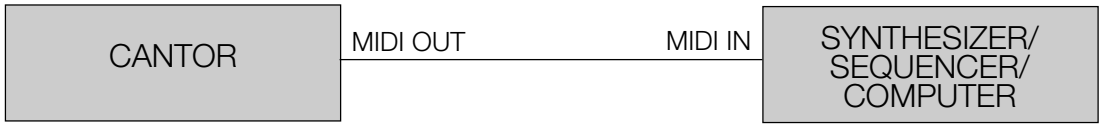
- SMPTE («Society of Motion Picture and Television Engineers»).
  This is a standardized time coding (in hours, minutes, seconds, and fractions of a second), the universal clock used in video and cinema, and also in the studio. If this code is inscribed on a video tape, for example, a precise time is associated with every image.

- MTC (Midi Time Code) : this is the equivalent of the SMPTE in MIDI

The principle is therefore very simple. A sound track (or any other support: video tape, compact video disk, SMPTE generator), contains a SMPTE code.

This code is transformed into MTC and sent to a MacIntosh. This, at precise times (given by the SMPTE clock), sends commands to CANTOR (for example «PROGRAMME CHANGES») and starts loading a Memory or starting an effect in the manner specified. These effects will therefore always be perfectly synchronized with the sound track, and therefore with the sound.

Remark :
ADB remains at your disposal for any information concerning the programmes to be used, and the type of configuration required.



CANTOR can also send MIDI events, i.e., Notes, Program Changes and Control Changes. Notes and Program Changes are related to desk buttons, Control Changes to desk faders. Each time a programmed button is pushed or a fader is moved, the corresponding MIDI code is driven out on CANTOR's MIDI OUT port, and thus other MIDI peripherals can be synchronised to the desk.
So, it is for example possible to program the Playback START / STOP button to send a Program Change command to a MIDI sequencer or audio tape machine in order to be synchronised.

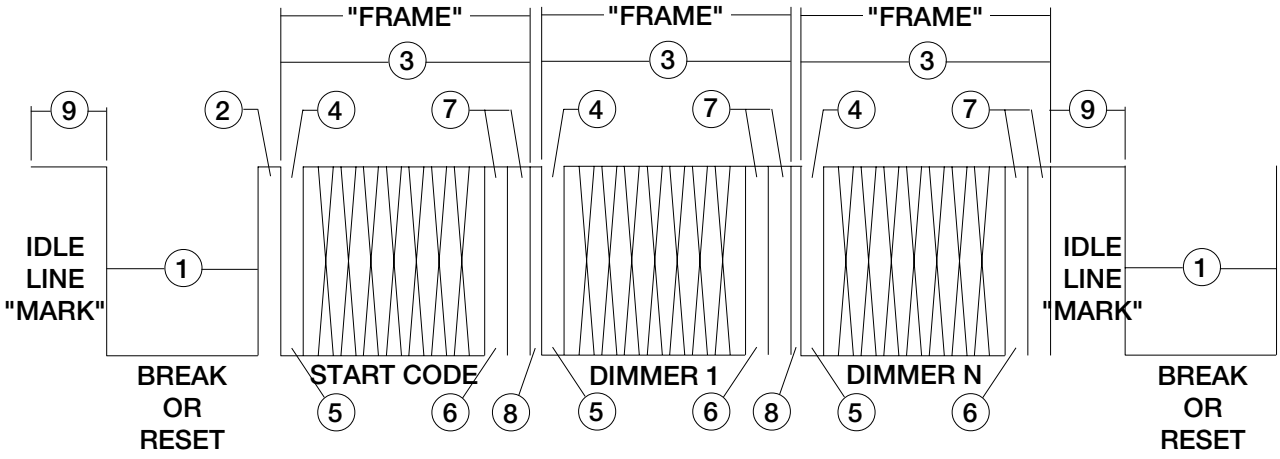
Appendix

CONTENTS

General Sspecification of DMX512/1990 Signal 123

MIDI Notes 125

General Specification of DMX512/1990 Signal



DESIG	DESCRIPTION	MIN	TYP	MAX	CANTOR	UNIT
1	"SPACE" FOR BREAK	88	88		250 - 350	µsec.
2	"MARK BETWEEN BREAK & START CODE	8.00	-	- 1.00	8 - 16	µsec. sec.
3	FRAME TIME	43.12	44.0	44.48	44	µsec.
4	START BIT	3.92	4.0	4.08	4	µsec.
5	LEAST SIGNIFICANT DATA BIT	3.92	4.0	4.08	4	µsec.
6	MDST SIGNIFICANT DATA BIT	3.92	4.0	4.08	4	µsec.
7	STOP BIT	3.92	4.0	4.08	4	µsec.
8	"MARK" TIME BETWEEN FRAMES	0	0	1.00	0	sec.
9	"MARK" TIME BETWEEN PACKETS	0	-	1.00	0 - 5.5 msec.	sec.

CANTOR : other informations

- always 512 channels sent / about 40 messages / sec.

CONNECTOR PIN-OUT	
	OUTPUT CHANNELS
CONNECTOR	XLR 5
pin 1	0 V
2	spare -
3	spare +
4	N.C.
5	N.C.

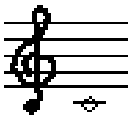
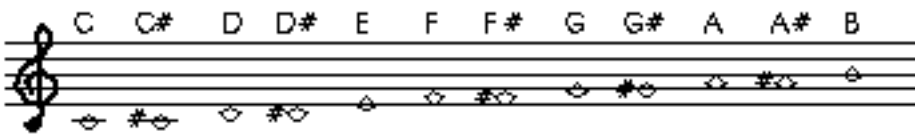
MIDI IMPLEMENTATIONS

ADB
(LIGHTING CONTROL DESK)

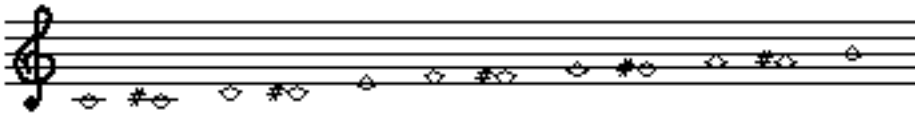
CANTOR
Version 1.1 26th Sept 1991

Function		Transmitted	Recognised	Remarks
Basic Channel	Default Changed	x x	1 - 16 1 - 16	separate channel for Notes, Programm changes and Control changes
Mode	Default Messages	x X	Mode 3 X	
Note Number	True Voice	x -	0 - 127 -	Each note programmable
Velocity	Note ON Note OFF	x x	0 - 127 X	used only for flashes
After Touch	Key's Ch's	x x	X X	
Pitch Bender		x	X	
Control Change		x	0 - 127	each Control Changes programmable
Prog Change	True #	x -	0 - 127 0 - 127	each Program Changes programmable
System Exclusive		x	x	see CANTOR manual
System Common	: Song Pos : Song Sel : Tune	x x x	X X X	
System Real Time	: Clock : Commands	x x	0 X	May control a running effect
Aux Messages 	: Local ON/OFF : All Notes OFF : Active Sense : Reset	x x x 0	X 0 x X	
Notes		All other MIDI messages are accepted, but rejected by the CANTOR		

MIDI NOTES



Oct -2	0	1	2	3	4	5	6	7	8	9	10	11
Oct -1	12	13	14	15	16	17	18	19	20	21	22	23
Oct 0	24	25	26	27	28	29	30	31	32	33	34	35
Oct 1	36	37	38	39	40	41	42	43	44	45	46	47
Oct 2	48	49	50	51	52	53	54	55	56	57	58	59
Oct 3	60	61	62	63	64	65	66	67	68	69	70	71
Oct 4	72	73	74	75	76	77	78	79	80	81	82	83
Oct 5	84	85	86	87	88	89	90	91	92	93	94	95
Oct 6	96	97	98	99	100	101	102	103	104	105	106	107
Oct 7	108	109	110	111	112	113	114	115	116	117	118	119
Oct 8	120	121	122	123	124	125	126	127				



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